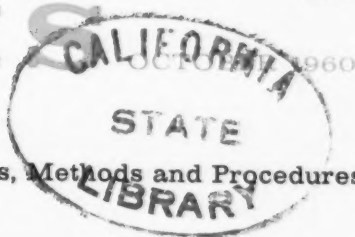


# Data Processing and Microfilming SYSTEMS

The Information Management Magazine of Ideas, Methods and Procedures

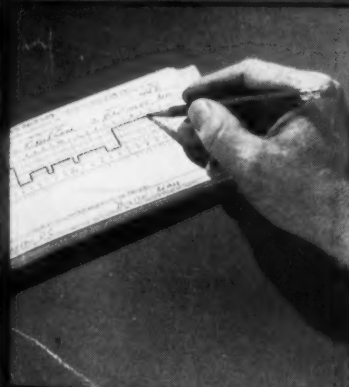


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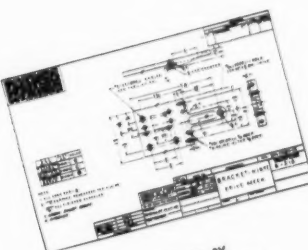


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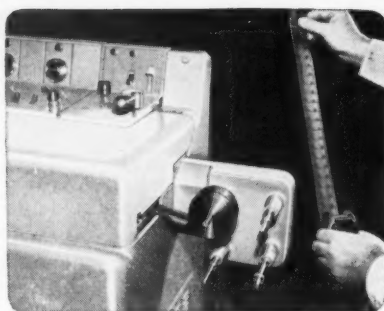
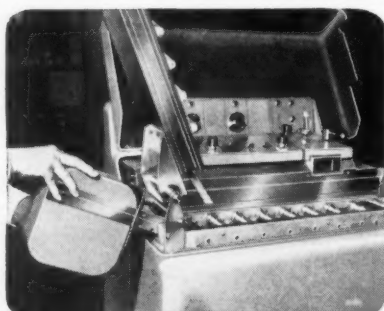
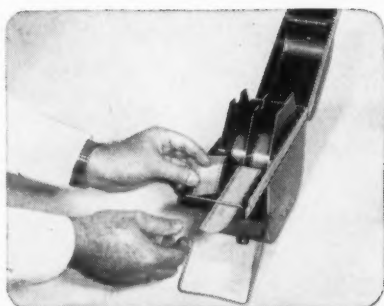
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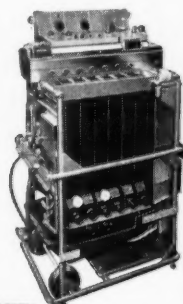
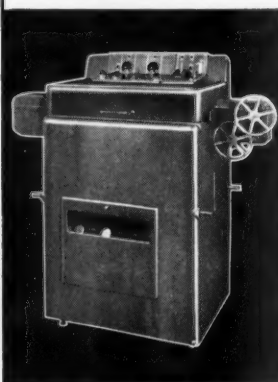
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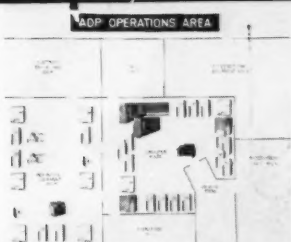
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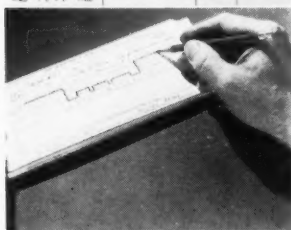
# Data Processing and Microfilming SYSTEMS

October 1960

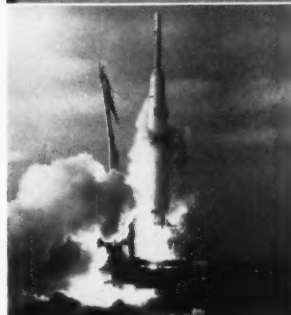
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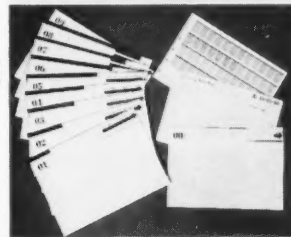


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### **Veterans' Insurance: Part II**

Conclusion of a two-part article covering the Veterans' Administration systematized insurance program. Details on a custom-built records retrieval system and how it operates.

### **Financial Weather Forecasts**

The Baltimore and Ohio Railroad has found a way to eliminate the old guessing game of financial income and expenditures. An EDP system offers complete data overnight on the whole line.

### **Microfilming Means Many Things**

You don't have to be an industrial giant to put microfilmed drawings to use profitably as shown by the experience of Cutler-Hammer, control equipment manufacturer.

### **IDP Spurs Manufacturing Process**

An integrated data processing system at the Mengel Company means faster, more accurate production at lower costs. Electronics makes the difference.

### **Out of the Filing Forest**

The U.S. Army Signal Equipment Support Agency (Fort Monmouth) handles distribution of vital records throughout the Army. Filing master materials posed a king-sized headache for them until they came up with a new filing system.

### **Dye-Back V. Non Dye-Back**

Recently issued DOD specs for microfilming have raised a storm of controversy. Microfilm expert Ernie Taubes looks at one aspect, dye-back v. non dye-back microfilm, and comes up with some interesting conclusions guaranteed to stir up controversy.

### **Medical Service Microfilm**

Connecticut Medical Service finds it is able to serve its subscribers better and faster through a Microcard record system. Details on how they do it.

# Data Processing and Microfilming SYSTEMS

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# EDITORIAL

## Our New Name

Effective with the next issue our name changes. DATA PROCESSING AND MICROFILMING SYSTEMS becomes SYSTEMS MANAGEMENT. We will still be the magazine of ideas, methods and procedures in data processing and microfilming as well as in other information management systems with one additional point of emphasis: our new title reflects the fact that while each technique has its own merits and advantages, each is only part of the bigger picture of information management.

In a recent issue we made the point that microfilming and data processing techniques were not end-alls in themselves but actually tools in the hands of the systems specialist, whose job is to record, process and distribute information. As our editors talk with information managers and management people who deal with the information produced, this fact becomes clearer and clearer. Representatives of microfilm and data processing service organizations confirm that their clients are becoming more and more aware of the bigger picture. This is reinforced by general reader comments in letters to the editor. *Today, very few men of management regard microfilming or data processing devices or tab cards or paper forms as complete systems. They are seen as components of greater systems designed for the recording, processing, reproduction and distribution of data.*

In turn, the man whom management turns to for vital data is not regarded as a microfilm man or an EDP man or any special man. He is a *Systems Manager*. Even if the information system he manages today is largely based on microfilm or tab cards or EDP, he has to be up on all information-handling systems because tomorrow his company's needs may require other systems tools.

Our aim is to keep the Systems Managers up to date with news and case histories of successful information management systems throughout business, industry and government. In effect, we are giving him the bigger picture; we are formalizing it with our new title.

You, our readers, suggested it and we are responding to your suggestion. Such an active reader-magazine relationship is the best guarantee that a magazine serves its readers' interests.

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## Information Management

by HERMAN LIMBERG  
Director of Management Reporting  
Office of the City Administrator, New York, N.Y.



### Management's Need to Know

Last issue this column described Information Management as the core of a campaign to meet the challenge of the electronic computer. Three years ago, Perrin Stryker struck one of the first blows in this campaign, which is now expanding rapidly. In his article, "What Management Doesn't Know Can Hurt," (*Fortune*, November 1957) Stryker underscored the costs of generating data and producing information. The theme of this article was management's ignorance of these costs. But there was also a secondary theme, somewhat muted, which revealed that "what management doesn't know" is what information it really needs. Some of the more cogent of Stryker's observations which comprised this secondary theme were:

#### Five Observations

*The use of electronic computers almost inevitably whets management's appetite for more information.*

*Only a few top managements have begun to realize that there is such a thing as too much information and have tried to make drastic cutbacks in paperwork.*

*There is no factual basis for the assumption that all managers today need more information and need it faster.*

*The cry for faster and faster information has become a shibboleth that very few managements have stopped to examine for its truth.*

*There is also the possibility that EDP may in the end so overwhelm executives with data that top management will realize that too much data can be as harmful as too little. The computers might, that is, carry the seeds of their own destruction.*

In concluding his article, Stryker stated that "systems and procedures men who have been exasperated by management's demands for more and faster information have had to assume that such information was worth the costs." From this, we may infer that costs should be the primary factor in determining management's information needs. But it seems more logical to determine first what those needs are and then design a system to accommodate those needs most economically. In other words, needs should determine costs; costs should not be the criteria for establishing needs.

#### Search Widens

The search for what management needs to know began several years before publication of Stryker's article, and has, in the past few years, gained increasing momentum and concentrated attention. The surge of interest in the subject, evidenced by the programs of the various management associations and by the study projects of many industrial and governmental organizations, is generally attributable to the wide acceptance of the new data processing techniques. Bluntly stated, the volume of data has continued to grow and multiply with the ever-increasing velocity of data generation and compilation. This has created new problems for which the solution will be found.

Information management has opened a new frontier for systems and procedures. It has provided both a challenge and an opportunity to upgrade the systems and procedures function to its proper status and role within the total management complex by bringing into

continued on page 38



# Miniaturization Report No.1

## What price automation?

In view of today's rising costs, the need for automation in the processing of engineering drawings is recognized as necessary. However, in the welter of claims and counterclaims for various miniaturization processes, a good deal of confusion has arisen around the relative merits of the 35mm and 105mm systems.

These facts need stating: Automation should not dictate film size; conversely, film size should not dictate whether or not automation is possible.

To clarify these points: One should not necessarily install a 35mm system on the assumption that it is the sole answer to high speed automated reproduction. To do this is to overlook the fact that the 105mm system is also capable of automation. And 105mm can often be automated without the expenditure of large sums of money for new processing equipment.

Both systems—35mm and 105mm—have their place in the modern engineering reproduction department. (The K&E MICRO-MASTER® Camera-Projector takes and projects both film sizes.) However, if automation is the only basic consideration, the case for 105mm needs further emphasis. For example: 35mm aperture cards for information retrieval are designed to deliver negatives quickly and automatically. General practice, however, is to key-punch both the aperture card and a companion "tracer" card to prevent excessive negative wear in sorting. Selection of the aperture card is manual. (Tracer cards also provide 23 additional key-punch positions.)

Tracer cards can also be successfully used with a 105mm system. And only one card need be punched. Selection of negatives, as with aperture cards, is manual.

From start to finish, let's see how the two systems compare:

### 35mm

### 105mm

- Negatives in aperture cards
- Punch-card retrieval
- Automatic "dry-process" reproduction

- Negatives in archival envelopes
- Punch-card retrieval
- Standard diazo reproduction

#### PREPARATION AND FILING

Original drawing photographed to yield master negative	Same
Tracer card key-punched	Same
Aperture card key-punched, negative inserted in card	Archival envelope machine numbered, negative inserted
Tracer cards and negatives filed	Same

#### SEARCH AND DELIVERY

Tracer card sorted to find location of negative	Same
Negative selected manually from file	Same

#### REPRODUCTION

Distribution prints made from negatives on automatic "dry-process" printer at rate of 20 ft. per minute.	Prints made from photographic intermediates on diazo machines at 60 ft. per minute. (Time spent in preparing intermediate offset by faster print speed of diazo.)
--	---

#### SUMMARY:

- Despite minor differences in procedure, preparation and filing take almost equal time (a matter of minutes).
- Search and delivery take exactly the same time.
- In production, printing speed using 105mm negative and standard diazo is as fast as automatic "dry-process", or faster.
- In short: both systems offer roughly equal speed and convenience.

Undoubtedly, if you are at all involved in engineering reproduction, you will require more facts than could be furnished in this brief message. We have them—complete with cost comparisons—and will be pleased to furnish them if you will return the coupon below.



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# New Equipment Review

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## Microfilm Reader

101

A completely new microfilm reader, the *Recordak 310*, has been introduced by the *Recordak Corp.* Features of the unit include full 90 degree image rotation and a side positioned film advance handle. Reduction ratios available are 20:1, 24:1, 32:1, or 40:1. Capacity of the 310 is 100' 16mm non-perforated film. Finished in two-tone green, the machine also has a 9" x 12" viewing screen.



## Tab Card Holders

106

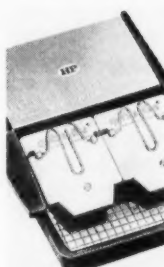
*Beemak Plastics* is offering a line of tab card holders which can be attached to products, conveyor belts, bins, boxes, shelving, etc. to implement production control, inventory control and other punched card systems. Magnetic Holder BP-130 has four heavy magnets which hold it firmly to data processing machine or other surface and provide easy on-and-off accessibility. Available in colors. Price: \$1.50 each.



## Tape to Card Converter

102

A universal code punched tape to card converter, the Model C750, has been announced by *Systematics*, a division of *General Transistor Corp.* The machine consists of a tape reader and control module and features a removable programming plugboard. Any five, six, seven or eight-channel punched tape can be used as input to punched card data processing systems. Multiple card layouts can also be processed.



## 35mm Microfilm Splicer

107

A simplified 35mm microfilm splicer using pre-cut Mylar tape is now available from *Hudson Photographic Industries*. The splicing tape, known as *Quik Splice*, is flexible and optically clear. Film ends are placed on the splicer cutting blades, blades are swung down, splice tape placed over the film and the paper tape backing is removed. The microfilm is then ready for viewing and printing. Price: splicer, \$14.50; pack of 100 splices, \$2.50.



## Control for Computer System

103

An "Auto Control System," which is said to increase the efficiency of computers has been announced by the *Philco Corp.* Designed for use with the *Philco-2000* system, it provides an automatic interrupt feature which permits the programmer to determine the system conditions that shall be checked, and the action to be taken when these conditions are present. The result is more efficient use of program time.



## Tape Equipment

108

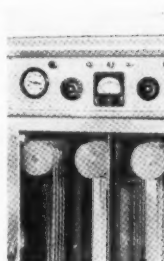
Information management installations with a high volume of punched cards may now change economically to magnetic tape for their data input and output requirements if they so desire. The means is *IBM's 1401 E* system. Key component of the new system is the 7330 Magnetic Tape unit which, in a typical system, will read data up to twenty times faster and write out results at more than sixty times the rate of punched card equipment.



## Card Trays

104

A complete system for the handling and filing of punched cards is available from *Tab Products Inc.* Called the *Tab-tray System*, it consists of different types of trays, and tension devices to hold and protect punched cards. Tabtrays are reversible and can be indexed at either or both ends. The tray will stand on either end unsupported and will accept #4709 or #4704 tension devices. Embossment at shelf front facilitates tray removal and replacement.



## Microfilm Processors

109

A complete line of Archival Micro-master processors for use with microfilm is available from *Ana-Tec Inc.* All models are constructed of stainless steel and have direct reading meters on the control panel. All Micromasters have stop-start buttons on each end of the machine for easy operation and can be operated without the services of a technician. Processing time for microfilms varies from 450 to 3000 ft/hr in 35mm depending on model.



## Work Flow Aid

105

A versatile office conveyor for the handling of departmental and interdepartmental paper work is being offered by *Mercury Industries Inc.* The unit moves individual forms and documents at any speed to meet individual requirements. Travel direction of individual belts may be changed and the position of the stops for removal of the documents can be set for any point along the way.

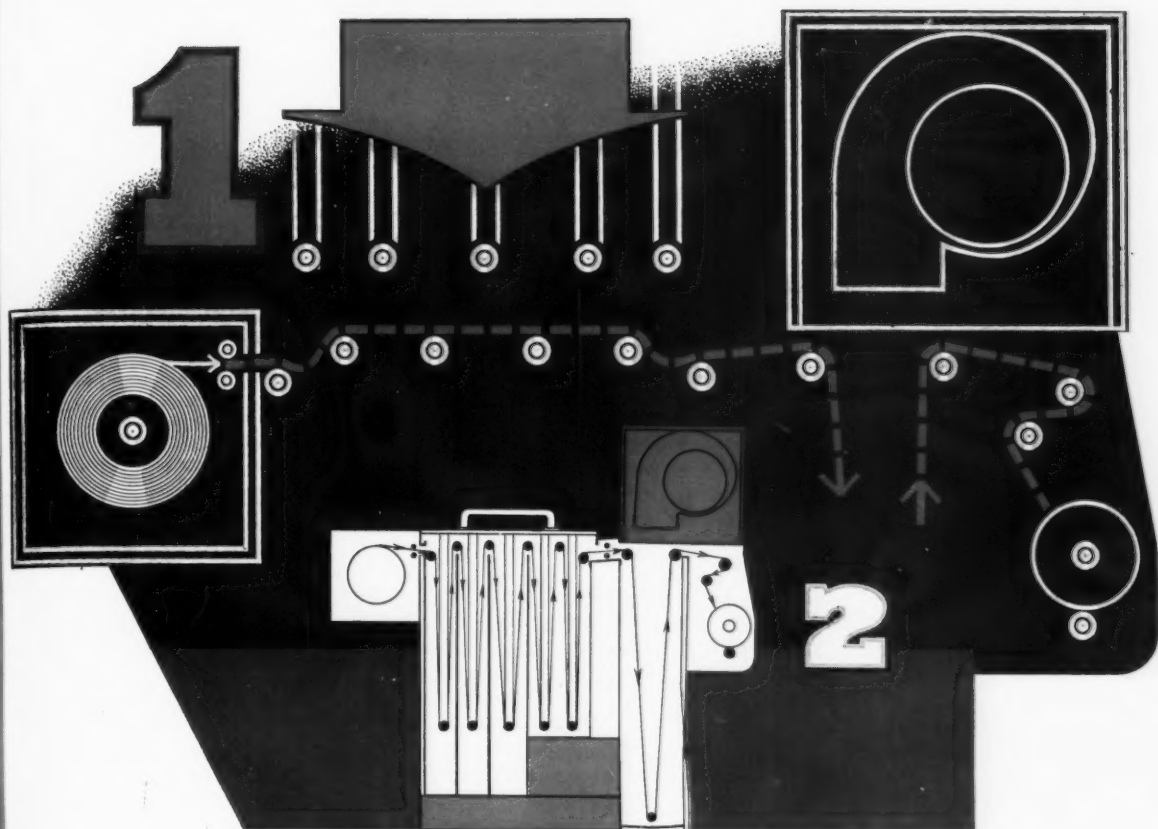


## Tape File

110

*Acme Visible Records Inc.* has available a line of tape filing cabinets equipped with grid partitions. Capacity of the 8" *Virginian* line is 102 rolls of 25' tape lengths. Adjustable grid wires are available to accommodate varying lengths. Other tray sizes and grid spacing may be combined to meet specific tape filing requirements. Individual trays are hinged with removable sections.

continued on page 26



## SIMPLICITY: key to better processing of film or paper

The clean operational design of the PROCESSALL is indicated in the threading diagram above (Fig 1).

The yellow, dotted line traces the path of the film leader through the transport system.

Figure 2 shows the counter balanced cover as it lowers effortlessly into operating position thus traversing the film through the processing system.

At this point a flick of the starting switch activates the PROCESS-ALL into a completely automated, dry to dry processing cycle of predetermined speeds and characteristics. Quality control is positive and constant.

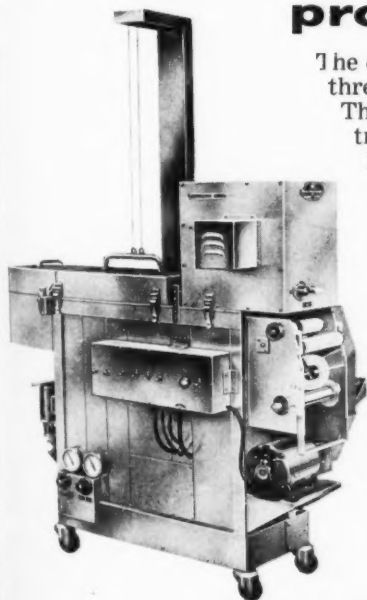
Every phase of operation and maintenance of this machine is just as simple as that.

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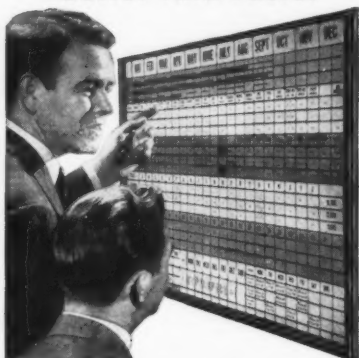
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## EDP in Action

by WILLIAM ORCHARD-HAYS  
Vice-President, C-E-I-R, Inc.



### Problem Solving: A Total Approach

Programming has grown concurrently in the past decade with the hardware. The resulting large systems of programs have now reached such a degree of complexity and power as to rival the machines. This "software" has in itself led to some of the most interesting applications of the hardware.

At first glance, this might appear self-defeating, but exactly the opposite is the case. The large machines are called "general purpose" because they can be applied to any problem involving data handling, arithmetic, logical decisions and

Effective this month, *EDP in Action* starts as a regular feature column. Guest experts will explore the latest applications and developments in electronic data processing as part of systems management.

preparation of printed reports. The job of the programmer is to adapt this powerful complex of machinery to a particular task through a specially tailored program. As the tasks themselves become more complex, the programmer finds that he cannot hope to do the whole job himself. He must rely on much programming work that has gone before; he must have workable operational procedures available to insure that his work is processed on the machine in minimum time to hold down costs; he must often plan his immediate work in such a way that his programs are usable by others. One has only to spend a day in a modern computing center to get some feel for the fantastic amount of information which the hardware will process and produce. The huge mounds of printed output which often accumulate are evidence of this. Without a high degree of organization, such work would be impossible for human beings to handle.

New complications are constant-

ly being added to the use of computers. We presently process jobs which may actually require more information in the way of instructions for the computer than the total input and output of a particular run. The higher speed and power, and also cost, of current machines, means that more work must be fed from remote locations if the lower cost per calculation is to be truly achieved. Thus, transmission lines enter the picture. This implies still more programs available to the central processor in minute fractions of a second in order to handle the variety and volume of input. A machine like IBM's new 7090 computer, STRETCH, can conceivably keep several hundred people busy feeding it work to do. A high degree of standardization is thus necessary. Otherwise it would be like an army in which every soldier had his own special manual and general instructions.

### Automation of Computing

On the other hand, the computing center must be prepared to handle great varieties of tasks, some not even thought of now, economically and expeditiously. This means actually, the automation of computing. A few years ago, it is unlikely that anyone comprehended the volume of information this implies. We have been moving toward it with ever more powerful machines. It appears that we are finally reaching the right order of magnitude.

It is not too difficult to imagine a central processing center with small remote satellite computers feeding into it and receiving results. The initial preparation and editing of input and the final formatting of printed output are already looked upon as sub-tasks, and much work has been done in these areas in the last two or three years. Transmission equipment to tie to already

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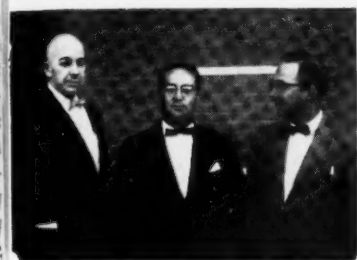
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page 33

# Industry News

● **The First Pennsylvania Banking and Trust Company** — the nation's oldest and Philadelphia's largest bank — has installed a completely automatic, electronic bank bookkeeping system which its manufacturer, Burroughs Corp., says is the first of its kind in the world. With it the bank completes the cycle started with quill pen bookkeeping in 1782.



MICRODEALER OFFICERS: (L-R) Ross Madden, Karl Adams, Jr., Hendrix Ten Eyck.

● **Microdealers, Inc.**, national microfilm service organization, elected new officers at its recent annual meeting. Karl Adams, Jr. heads the group while Ross Madden will serve as vice-president and Hendrix Ten Eyck as treasurer. In attendance at the session were four past presidents of the National Microfilm Association, Richard Batchelder, Wynn Crew, Joseph Curtin and Ten Eyck.

● **American Management Association** has organized a new unit, the Visual Communications and Training Department. Its purpose will be to use all communications tools available to advance the management skills of the 70,000 executives who participate annually in AMA meetings.

● **EDP technical sessions** are scheduled by the Office Executives Assn. for the **National Business Show** (see Calendar right). They are scheduled to provide information on electronic data processing to interested executives. . . . Newcomers to the systems field will find

interest in the Systems Panorama at the International Systems Meeting of the Systems and Procedures Assn.

● "Management games" are undergoing a change from games about business in general to games representing specific industries. Two recent examples are "bank management simulation" in which executives of the Mellon Bank & Trust Co. (Pittsburgh), participated and "business strategy" in which Pillsbury executives took part. The Mellon men were broken down into three teams, each with equal assets, capital and deposits. For five hours, the players made decisions that took their bank through two years of hypothetical operation. Decisions were fed into computers which determined how effective the decisions were. The same basics apply to the Pillsbury game. Similar games are said to be in the works for utility, insurance and retailing.

● "Systems and standards—A New Era in Microreproduction" will be the theme of the 1961 National Microfilm Association convention. Frederic Luther, president of NMA

recently announced the theme and stated that all areas of microreproduction and data processing will be represented in the program.

● A new technical society has been formed with the aim of promoting "the arts and sciences, standards and practices connected with the management, programming and operating of computers and data processing machines." The title is the National Society for Electronic Data Processing Machine Operators and Programmers. NSEDPMOP is located at 22 E. 17th St., New York 3, N. Y.

● Naval battles of the future (when and if) may very well be fought according to strategy dictated by automatic machines with commanding officers merely standing by as observers. A new data processing and communications systems, Naval Tactical Data System, which utilizes sea-going computers is being worked on.

● The use of computers for routine white collar office work brings faster, more uniform decisions and

*continued on page 36*

## Calendar of Conferences

American Records Management Assn., Plankinton House, Milwaukee, Oct. 19-22.

Seventh International Meeting of the Institute of Management Sciences, Hotel Roosevelt, N.Y.C., Oct. 20-22.

Controllars Institute of America, Fairmount Hotel, San Francisco, Oct. 22-26.

National Business Show, Coliseum, N.Y.C., Oct. 24-28.

1960 Computer Applications Symposium sponsored by Armour Research Foundation, Morrison Hotel, Chicago, Oct. 26-27.

Society for Advancement of Management, 1960 Fall Conference, Biltmore Hotel, N.Y.C., Oct. 27-28.

Seventh Institute on Electronics in Management, Washington, D.C., Oct. 31-Nov. 4.

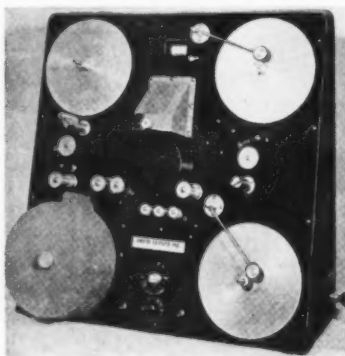
Business Equipment Exposition sponsored by Office Equipment Manufacturers, Los Angeles, Nov. 1-4.

American Production & Inventory Control Society, Sheraton-Cadillac Hotel, Detroit, Nov. 3-4.

Society of Reproduction Engineers Visual Communications Congress, Sherman Hotel, Chicago, Dec. 3-6.

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## Microfilm Topics

by HUBBARD W. BALLOU  
Columbia University Libraries



### Sheet Microfilm: A Revival

The earliest experiments with microfilm in the 1850's were necessarily in sheet form as they were made with cameras using glass plates. By the time interest in this medium was revived in the 1930's a change had taken place in photography. Plates were on their way out and sheet film was being challenged by roll film.

Modern microfilming in the U.S. is the result of two lines of development. The first of these was the evolution of equipment for commercial filming based on the 16mm movie camera. The second grew out of the early use of the 35mm Leica camera for scholarly microfilming. Ribbon film is common to both of these, and both are by-products of the motion picture industry. Consequently, when microfilming grew to production stature, equipment designed for mass processing of movie film was adapted to handle microfilm. As a result, it became economically impractical to depart from ribbon film as the basic element of microfilming in this country.

### European Development

In Europe there has not been such a close alliance of microphotography and cinematography. Generalizations are always suspect, but one may note in this case that lower labor costs and smaller production figures abroad have lent themselves to greater experimentation and departures from ribbon microfilm. Step-and-repeat cameras for the production of sheet microfilm have been developed to a greater extent. Ribbon film is often cut into short strips and stored in this form rather than on 100-foot reels.

For material consisting of long runs of text and for information where storage is important and access infrequently required, a ribbon

format is ideal. When material of high reference use is microfilmed the ribbon serves to imprison or freeze it into an inaccessible form. The eight-inch strip of 35mm film, the microfiche (sheet microfilm), and the Microcard are all attempts at unlocking the unit of information on microfilm.

### Progress During World War II

How were we to keep the economic advantage of the ribbon format, and yet release small blocks of data stored in this form? World War II brought with it many problems not faced previously, and gave stimulus to their solution. Out of this came the use of 70mm film and the Filmsort card. Both of these lend themselves to the unitization of microfilm images. Both started out as ribbon microfilm but ended up as single frames. In the case of 70mm microfilm (and 105mm film which grew out of it) we find the images approaching a size not truly "micro," and operating costs closer to process photography than the more economical microphotography. The Filmsort aperture card and its allied acetate sleeve are designed to work with 35 and 16mm microfilm and to give it the manipulative features of the sheet. In a sense, they are a compromise between the ribbon and sheet, but at the same time add features that straight microfilm does not have.

### U.S. Beginnings

Sheet microfilm has not been overlooked in this country, however. Experimentation with the sheet format began in the 1930's and has been kept up. The Diebold Cumulative Microfilm, which has continued as the Luther Unitized Acetate, is a sheet of acetate to which short strips of microfilm are lami-



nated. The Micro-Research Card is a combination microfilm and punched card on a sheet of film 5 x 8 inches in size. The micro-images take up half of the sheet and the coding holes and slots the other half. The Microcard Corporation developed a camera using 70mm film but placing a number of images (about the size of those found on 16mm film) in step-and-repeat sequence onto 70 x 120mm frame. These frames are then cut apart and used to print Microcards. A simplified version of this camera for institutional use was exhibited at the 1960 National Microfilm Association convention. The Records Service Corporation has introduced their Micro-fax camera to make micro-sheets 8½ x 11 inches in size and a reader to use with them.

#### Microfilm Tab Cards

As an extension of the Filmsort principle, we find the development of the sheet microfilm tab card. Ozalid began this with their Actifilm. These sheets of diazo film are printed with selected frames from a ribbon film. Portions of the sheet may be reserved for punched card applications, if desired. The Kalvar Corporation brought out their KalvaKard, which is similar, but uses the heat processed Kalfax film rather than diazo film. This makes possible a further application, which they have named the Kalfax Add-a-frame. In essence, this is a system that permits selective printing and developing of micro-images to the same KalvaKard weeks, months or years later.

There are indications of many new and exciting variations on the sheet microfilm theme. One writer mentions disk film with images reduced to more than 1/300 times arranged in a spiral on the disk. Another suggests a micro-image etched on a stainless steel sheet. A further speculation offers as a starter the contents of the *Encyclopedia Britannica* on the head of a pin. The sky is not the limit. Space studies have brought miniaturization of electronic equipment. We can expect miniaturization of microfilm equipment and processes and probably more and smaller micro-sheets. Sheet microfilm is here to stay. □

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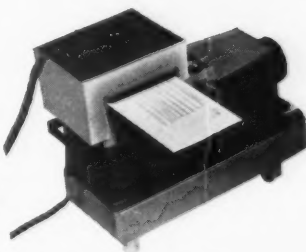
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A SPECIALLY DESIGNED Thermo-Fax Selective Copier retrieves case history data from printed lists at the VA's Philadelphia office.

# Insurance Enters the Electronic Era

VA's Automatic Data Processing program is being

watched with interest by the entire insurance industry.

by JAMES HUGHES

Back in 1952 the Veterans Administration made a decision of immense importance to the vast American insurance industry. It decided to automate its Department of Insurance.

The Department is one of the largest insuring agencies in the United States, serving over six million active accounts representing more than 43 billion dollars of insurance. It follows that its operations would be watched keenly by the remainder of the insurance business.

For 40 years the mammoth job of insurance accounting had been done largely through manual processes. There were, as there had to be, problems due to inevitable human error and limitations, illegible or confusing entries on record cards, etc.

These problems became greater or less in proportion to the scope of operations and workloads, but they were always troublesome and costly. The VA's Automatic Data Processing program was launched after a feasibility study based on thoroughly detailed specification of VA's complex requirements showed that ADP would dispose of chronic difficulties and enable the Department of Insurance to *do more better with less*.

Initial planning centered on building a complete punched-card system, but included a sharp look into electronic data processing, then in its infancy. One compelling motivation in deciding on a punched-card pattern prior to electronics was a strong indication that it would result in quick dollar savings.

The punched-card system also became the spade

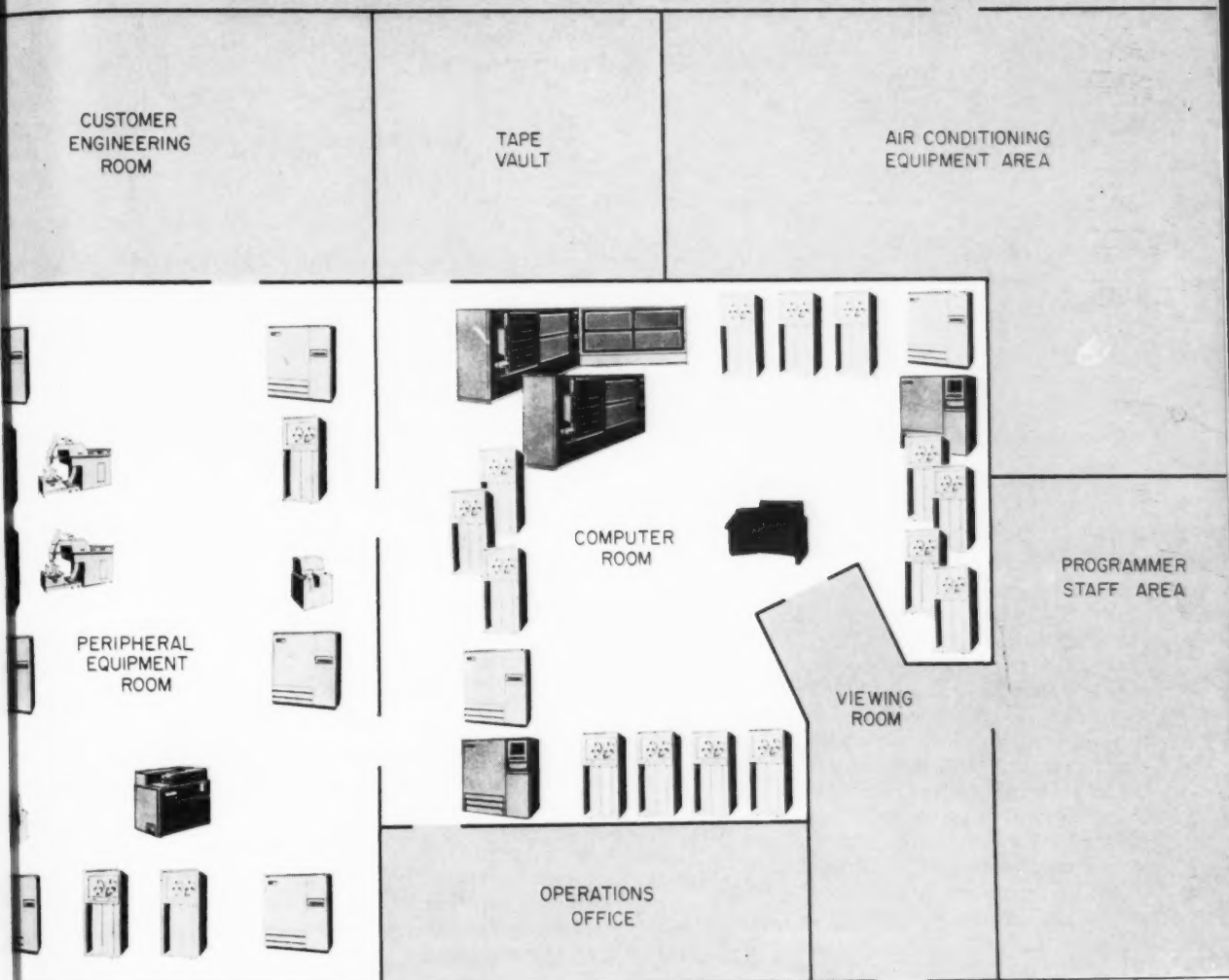
work preliminary to transfer of all accounts to a magnetic tape master record. This master record is the functional heart of the automatic data processing system, just as the premium record card was the hub of the old manual process.

## Philadelphia Operation

The Department of Insurance maintains executive offices in the Veterans Administration Building in Washington. However, all data processing is carried out at the Department's three regional offices. The first of these offices to get the full ADP treatment was the one at Philadelphia and when conversion is completed it will be the home of the master record for all three offices. At that time, the VA will have the most completely integrated system of automation in existence for insurance accounting and control.

At the Philadelphia office there is a 7000 square foot building within a building. It is air conditioned by three 30-ton units for its houses, that delicate robot of many parts, a computer, and its peripheral equipment. That equipment includes six high-speed tape units which read and write characters at the incredible speed of 62,500 a second, and 8 tape units that read and write 15000 characters per second. It also includes a unit that transfers data from tape to unched cards at the rate of 100 cards a minute, readers that transfer data from cards to tape at the rate of 250 a minute, and high-speed printers that have a rated speed of 500 lines a minute.

# ADP OPERATIONS AREA



In order to give the Department its magnetic tape master, the system is presently converting nearly 19 million punched card records to less than 100 reels of tape!

All records of several policyholders are grouped together and separated from those of other policyholders by  $\frac{3}{4}$  of an inch of tape called a record gap. This grouping is done so as to have as few gaps as possible and thus use the fewest possible reels of tape.

## Processing Procedures

Each grouping is fragmented into many segments. A Fixed Group Segment tells the computer how many records are in the group and the number of characters involved. Each policyholder has a Fixed Life Segment which identifies all his policies. There is a Fixed Policy Segment for each policy the insured has which provides information about that policy. In addition there are segments

which include data on dividends, loans, liens, disability insurance, etc.

Each day the three field offices receive more than 100,000 premium payments, besides about 23,000 applications for loans, reinstatements, dividend withdrawals, premiums, waivers, policy changes, disability benefits, cash surrenders and a great variety of inquiries.

The processing routines are identical in Denver, St. Paul and Philadelphia up to a point. To begin with, payments and premium notices are separated from all other subject matter. Payments are verified with premium notices to determine that premiums are paid as billed. Premium notices go to an IBM #407 accounting machine, where they are listed and batched with summary cards showing batch totals. Payment checks go to an IBM bank-proof machine, where they are proof-listed and classified for deposit, with bank-proof totals

*continued on next page*

for each batch. The batch totals of premium notices are compared with the batch totals of payments, and differences are reconciled.

The premium notice card now is approaching a new course of treatment. It is the means or source document for updating the master record. So, in the cases of Denver and St. Paul, after the other subject matter is processed, these cards are sorted to terminal digit sequence, tabulated for totals and sent by wire transmission to Philadelphia.

#### **Obtain Various Information**

Miscellaneous items — applications, requests, inquiries, etc. — are processed after the current status of the respective policyholder's accounts are obtained from the master.

A card request for status of account is key-punched; status will show any changes to date and will come back as a record printout or printed statement. The source document, such as some type of application or inquiry, which caused the status request is held pending until the record printout is received. After it is received and processed, any change in the master record must be prepared in punched-card form to update the master record.

Requests for record printouts of account status and policy changes are listed with batch totals and sent to Philadelphia.

#### **Differences Reconciled**

In Philadelphia, premium notice cards and status request and policy-change cards from St. Paul and Denver go to an IBM #407 accounting machine again. Here the batch totals are taken and compared with the summary cards. Any differences are reconciled.

Now, there are six separate stacks of punched cards in batches — the premium notice cards and the status request and policy-change cards. Two of these stacks are from St. Paul, two from Denver and two that originated in Philadelphia. These two stacks of cards from each office are translated into tape, there are now six reels of tape instead of six stacks of cards in batches; two reels of tape for each of the three offices.

*continued on page 38*

## **Big And Active**

The Social Security Administration's offices in Baltimore are involved in the largest paperwork operation in the world. "Paperwork" is used in the loosest sense, for actually more and more of their operation is concerned with film — specifically, microfilm. In fact, theirs is one of the largest centralized microfilm operations in the world — and every foot of its microfilm is active.

Given the name and date of birth of almost any American, the Administration through its microfilm system can produce his Social Security number in less than 30 seconds out of an index of over 165 million names.

Much of the Administration's operation is so completely mechanized that records *never* appear in paper form. Some firms now supply the Administration with data on their employees' quarterly earnings on magnetic tape, which is converted to readable form on electronic processing equipment from which microfilm is made. This enables the Administration to arrive at the microfilm stage in its recordkeeping without going through the time-consuming process of printing magnetic tape to paper listings, then microfilming the listings. The Administration now operates three IBM 705 Model III computers on a three-shift basis and has developed the first Cathode Ray Microfilm Printer that produces 16mm film directly from magnetic tape.

Naturally, when the whole of an operation is as large as the Social Security's, the parts of that whole are impressive in themselves. Take the matter of splicing. Every year nearly 4,000,000 microfilm documents are spliced by the Social Security office.

Social Security's microfilm

operation is managed by Edward Rosse, one of the most respected systems men in the nation — and one of microfilm's most enthusiastic missionaries.

"Microfilm is probably the most efficient tool of office administration to have been invented in the last 100 years," says Rosse.

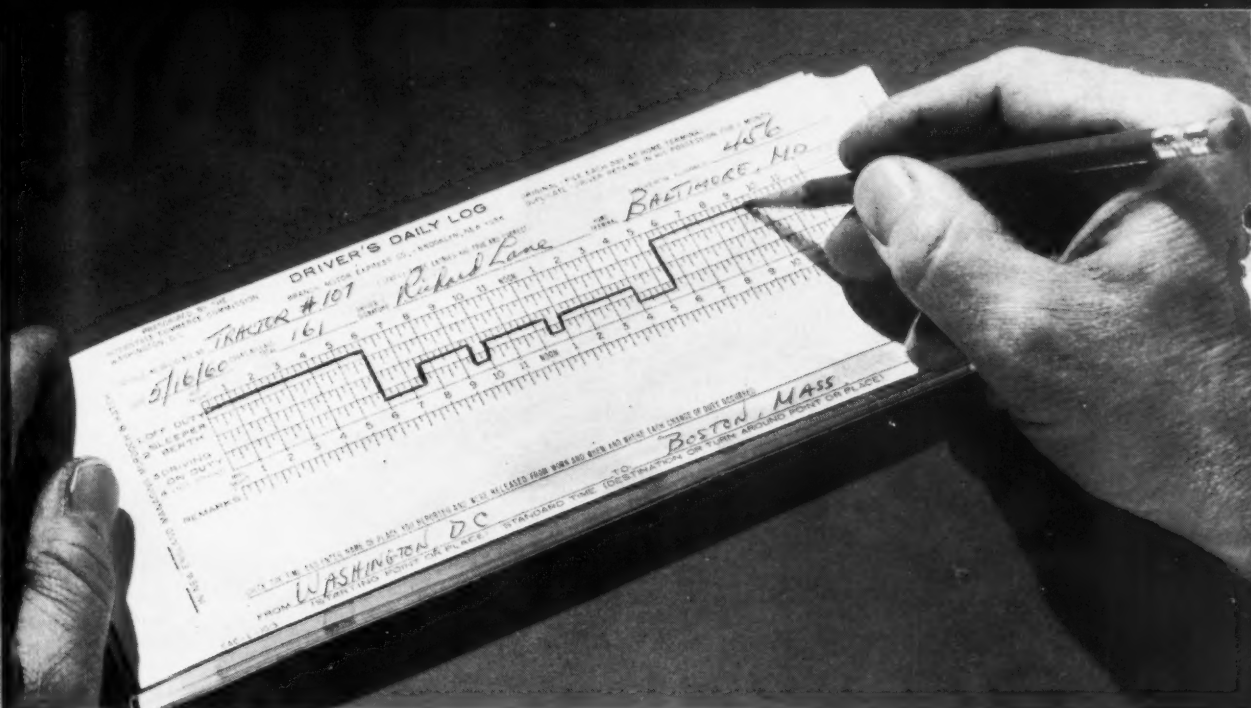
The high degree of efficiency of Rosse's operation is attributable in large part to his willingness to use the latest developments in equipment and materials, and the cooperation of industry groups, like Microdealers, Inc. For example, Microdealers, through the Graphic Microfilm Corp. of Washington, supplies the heat processed film which is one of the corner stones of this operation.

This film is marketed by the Kalvar Corporation under the name "Kalfax Film". Duplicate copies of original microfilm records are prepared on it at a rate of 60 feet per minute — ready for use!

The original film becomes the Administration's master film and is stored in 1,000-foot rolls in a safe underground location.

The two duplicate films are cut up into strips of 1,000 accounts each. One thousand accounts are recorded on approximately only seven inches of film. The strips are spliced on to previously set-up film magazines. Each of these magazines, which has a capacity of 100 feet of film, is sufficient for the entire lifetime earnings records of 1,000 individuals. To refer to any individual's earnings records, the proper magazine is inserted in the slot of an electronically controlled film reader. The outer strand of film contains the latest quarter or posting cycle, and as the film is moved in the reader, the viewer gets to the older quarters in detail. □





## Tab System Cuts Trucker's Costs

Branch Motor Express, East coast trucker, finds that new tab-card log books speed handling of drivers' daily records as well as shaving clerical costs.

Branch Motor Express Company, with headquarters in New York, enjoys a growing volume of motor freight business in New England, the Middle Atlantic States and the District of Columbia. Along with its growth, Branch has seen a rising mountain of paperwork involved in keeping records on the activities of 625 drivers, 302 tractors and 100 straight trucks.

As any motor carrier knows, one record — the Driver's Daily Log — requires constant checking, handling and filing, in addition to taking action on matters revealed by this record.

J. Rubenstein, comptroller of Branch Motor Express, has long pushed for mechanization to improve the internal handling of driver's log reports. He wanted to hasten the filing and locating of reports and to more speedily gather the information which is needed daily for intelligent management of personnel.

Last year, with a vastly improved

system in hand, the company received permission from the Interstate Commerce Commission to let them inaugurate the use of tabulating cards as internal copies of the Driver's Daily Log Book. Together with Milton Cantor of Baltimore Business Forms, Rubenstein has worked out the production of a 31-set log book in the tabcard size (7 5/16 x 3 1/4) for use by the company's regular drivers.

### Duplicate Copy for Driver

Each card is followed by a single sheet of carbon paper and a paper duplicate of the original leaf. The duplicate copy remains in the binding as the driver's permanent record.

"Now," reports Rubenstein, "when a driver has completed his card form, the log is forwarded to our safety department, where it is key-punched with the date, driver's number, home terminal and the total driving hours."

At this point the keypunched in-

formation is reproduced from the card log into a blank group of machine accounting cards. This reproduction technique leads to the machine filing of the original signed card, and the use of the reproduced card for all statistics. A five-day accumulation of drivers' hours are printed from the tab cards, and terminal managers are notified if drivers are violating the 60-hour on-duty rule.

The tab card Driver's Daily Log permits machinery to file the logs alphabetically. The ability to perform these clerical tasks mechanically results in savings of personnel amounting to \$9,000 a year.

Quick processing of information helps prevent violations of the 60-hour on-duty rule. Tab card records are maintained more efficiently and in better condition. Files, available for examination by safety inspectors of the ICC, are more current. Thus, everyone is more happy with the new arrangement. ☐



IBM SELECTORS facilitate retrieval of aperture cards from file. During next phase of operation the cards are fed into Wright accounting machines for printing out.

## Microfilm Speed

Orders for U.S. Army Signal Corps  
travel swiftly thanks to information



CARD-TO-PAPER reproductions at ARGMA are made on a Haloid Xerox Copyflo printer capable of producing 20 feet of drawings per minute.

Unknown to the general public, a unique combination of microfilm and electrical accounting apparatus is making a valuable contribution toward the nation's defense. It is the documentation recording and re-retrieval system worked out by the U.S. Army Rocket and Guided Missile Agency (ARGMA) located at the Redstone Arsenal, Huntsville, Alabama.

ARGMA stores some 850,000 reproductions of all engineering drawings and specifications for the Army's vast guided missile research program plus an additional 1,500,000 inactive microfilmed drawings. The agency's job is to make data from these documents easily accessible.

The documentation center of the agency is the particular department responsible for receiving, checking, recording, storing and reproducing documents and relay data for each component of every missile system. In 1954, with the very rapid expansion of the missile program, it was recognized that the then current procedure of manually storing blueprints and original drawings needed overhauling.

After two years of study the current mechanized microfilming system was evolved. Under this system, all microfilm is mounted in key-punched Filmsort aperture cards. It began with the purchase of two Recordak cameras and a group of Wright accounting machines and IBM card selectors. During the early months when the system was being installed, one of the difficulties which had to be overcome was the maintenance of an uninterrupted manual system while the conversion to aperture cards and accounting machines was taking place.

When the procedure was being organized, all drawings were received by ARGMA in hard copy from the contractors. The drawings were checked for accuracy, microfilmed on 35mm microfilm, and sent to an outside processing laboratory.

After processing, an EAM (electrical accounting

## Relation's Defense

Technical drawings are filled quickly,  
retrieval system at Redstone Arsenal.



STRICT FILM INSPECTION at ARGMA allows only a small tolerance. Here a worker examines film with American Optical Company microscope before accepting it.

machine) card containing all pertinent information was keypunched and key verified directly from the roll of microfilm as read through a viewer.

The keypunched card was then used to reproduce as many duplicate decks as necessary, and by means of a semi-automatic mounter, the roll film was cut and mounted into the punched card. Simultaneously, the operator of the mounter compared the drawing number shown on the film against the drawing number punched in the card as a final check.

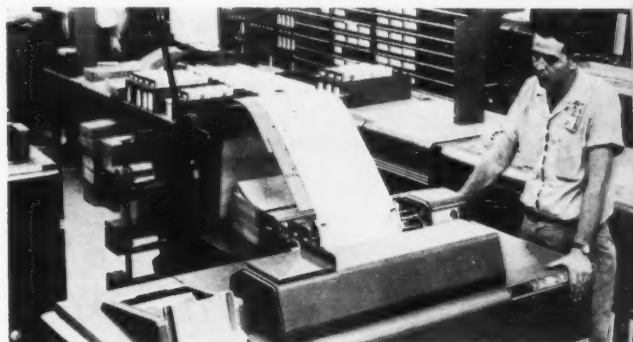
Once microfilm had been introduced for the storage of engineering documents, copying became the next step. The agency has set up the following methods of printing out all data:

1. *Card to paper.* For those needing paper copies in quantity, ARGMA has installed a Haloid Xerox Copyflo printer which prints the microfilmed image from aperture cards onto either plain or onto reproducible paper at the rate of 20 feet of drawings per minute.

2. *Card to paper.* The Filmac 200 microfilm viewing machine has been procured in sufficient numbers to place it strategically throughout the ARGMA engineering department. Engineers may view any of the drawings or produce 18x24-inch reproductions on the Filmac.

3. *Card to card.* Two varieties of equipment permit printing from original cards to duplicards. One is a small, manually-fed machine used for filling small requests. The other is an automatic card-to-card printer which will reproduce duplicards in quantity. Both machines are products of Filmsort. Companion of the mechanized card-to-card printer is the Tecnifax developer which matches in development the cards turned out by the printed with no time lag.

4. *Paper to paper.* An Ozalid Printmaster reproduces paper copies when an original must be duplicated for rapid distribution. □



DATA from aperture cards is printed out on above apparatus. If card is to be removed from file machine will print its own disposal information.



PAPER COPIES of selected microfilm drawings are made within ten seconds by Thermo-Fax technique. Here engineer removes reproduction.

# Industrial Production Control

## The Punch Card Way

In the manufacture of welding equipment components it can be disastrous if one part is defective. That's why Sciaky Brothers relies on a mechanized card system to act as an ever-present production control monitor.

by MAURICE SCIAKY  
*Sciaky Bros., Inc.*

At Sciaky Brothers, a punched-card data processing system has enabled us to put equal emphasis on each word of the phrase "production control." Mechanized accounting techniques enable us to monitor "production" step-by-step; machine-prepared reports provide "control" by putting into the hands of Sciaky management a complete roster of current statistics on inventory, labor distribution and efficiency, sales and

engineering, in fact all activities.

Both ends of this operation stem from a comprehensive manufacturing control program which, in effect, operates our Chicago plant on the basis of information contained in IBM cards.

### Production Control Necessary

Tight controls are essential in a factory such as ours, which manufactures virtually all components that go into welding equipment. There is no room for error in the manufacture of a product which is

relied upon to provide safe construction in critical items.

However, we are not tooled up for conveyor-type mass production. Almost every job moving through our shop is custom-built, and certain dangers are always inherent in this type of operation.

### Inventory Problems

Before installing our data processing system, we encountered them in the form of inventories which got out of control when it was necessary to stock as many as 15,000 components for a single piece of equipment. At one time we discovered three years' supply of unneeded nuts and bolts in our stockroom. On another occasion we discovered that we had a 10-year supply of resistors that were becoming obsolete.

Plant floor space and customer service became joint problem areas when 15 or 20 machines were completed but could not be shipped because we hadn't planned use of our

DATA about a part to be made—raw material, machines and operation sequence—is noted.



CARD REQUEST FORMS containing data are routed to operators making punch cards.



IBM machine prints routing folder which will hold cards, drawings, even small parts.





testing facilities properly and could not make final check-outs of the products. Expediting costs and effort mounted unnecessarily.

To all these problems we found punched-card manufacturing control to be the perfect counter-measure for a quality, custom production system.

As a direct result of the applications of our International Business Machines Corporation punched-card data processing equipment to these areas, we have been able to triple our business volume without any increase in our manufacturing control personnel. We have reduced our stores inventory by a million dollars. Concurrently, obsolescence became a negligible factor as the result of purchasing based on punched-card data. The paperwork flow time required to process a manufacturing order, formerly one to two weeks, now is accomplished in 12 to 24 hours. As a result, we have been able to shorten delivery times without disrupting schedules.

#### Nuts-And-Bolts

The basis of our system is creation of a punched-card representing each of the major manufacturing factors—money, materials, machines, labor and movement through the factory. With each production step and machine component reflected in a punched-card, we are

able to follow the manufacturing process exactly, evaluate it at any time and correct or adjust it when necessary.

There are two phases to the punched-card manufacturing control system developed by H. B. Neander, Sciaky's chief cost accountant. The first phase is preparatory and involves punching of the necessary cards. The second phase takes the cards through our factory during the manufacturing process.

When a piece of equipment is to be manufactured, a process engineer prepares a drawing master card request form. For each drawing shown on the bill of material of the part to be made, he itemizes which of the approximately 80 operation centers will perform the work; the sequence of operations; the estimated set-up, lay-out and running times for each operation and the tools or jigs which are to be used.

Our machine accounting department places all this information into machine-language at card punch machines, which prepare schedule cards and operation cards. Also punched is a routing bill of material card in which is indicated all the drawing numbers of the parts to be made for each bill of material or sub-assembly. Held in file, these cards give us extreme flexibility throughout our system; any drawing revisions made by the engineering

department can be reflected in this master deck simply by sending the card to the machine accounting room for preparation of new IBM cards.

When an order is released, the production control department requests preparation of a production order master card. It contains manufacturing order number, bill of materials number, and number of units to be manufactured. These are used to pull the proper drawing master deck cards from a previously-created file. From existing cards our IBM equipment reproduces "move" cards and operation cards into which are punched the total number of pieces to be made, and the total time required for each operation.

#### Bill of Materials

While the production control department is processing these cards for the labor to be performed, the material control section is in action in another direction. It prepares forms from which a bill of materials master deck of cards is punched. Further machine processing creates purchase cards for parts not carried in standard stock. Run through the accounting machine, they produce a listing so that purchasing does not have to wait until the inventory control file has been analyzed before it

*continued on page 36*

ROUTING FOLDER goes to factory where cards are taken from it and placed in load board to indicate raw material is on hand.

END RESULT of control system enables parts to move efficiently on Sciaky assembly line and production of precision equipment.



## **PICTURE REPORT**

(1) INSPECTION (right) of microfilm rolls of drawings procured under contracts with individual aircraft manufacturers. (2) BELOW, reproducing accepted rolls.



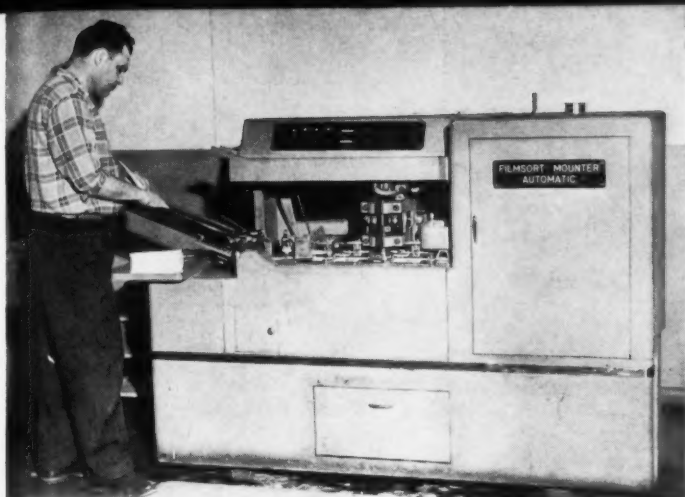
## **Clear Sailing for Navy Aperture Card System**

Philadelphia Supply Depot is master record point for Navy-wide procedures.

Among the first major organizations to turn to and recognize the value of the microfilm aperture card system were the U.S. defense agencies. In order, the Army Signal Corps, the Air Force Wright Air Development Center and then the Bureau of Aeronautics put into effect aperture card systems for engineering drawings. Recently, a uniform system was adopted for the entire Department of

(3) REPRODUCING duplicate aperture cards. Machine punches and types the drawing number and other data on duplicate cards.





(4) AT LEFT, high speed machine mounting of microfilm frames into aperture cards. (5) BELOW, aperture cards ready for shipment.



Defense under specification MIL-D-9868 (*Data Processing & Microfilming Systems*, July, P. 27).

The U.S. Navy has adopted microfilm aperture cards as standard procedure and has gained important time- and money-saving advantages, particularly in the area of aircraft engineering drawings. The Naval Supply Depot, Philadelphia, is the master record point for all aircraft drawings. Rolls of microfilm of original drawings are received at Philadelphia from aircraft contractors. The rolls are inspected, and accepted rolls are duplicated. In addition, duplicate aperture cards are reproduced which include drawing number and other data.

The microfilm frames are mounted into the aperture cards on special high-speed machines, which are then shipped to "customer" activities. These include overhaul and repair departments and Naval Air Stations. At the "customer points," dry process microfilm enlargers are used to make hard copies. Reader-printers are also used for quick use. The key elements of the system are shown on these pages in official Navy photographs. □



(6) MAP shows Naval stations which receive microfilm aperture cards from Philadelphia.

#### AIRCRAFT OVERHAUL POINTS



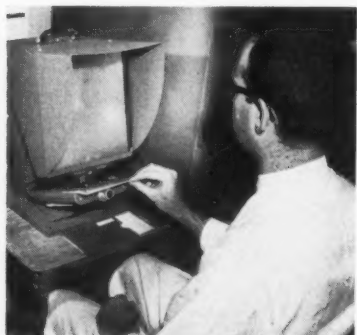
(7) END RECEIVERS use microfilm reader-printers (left) to analyze engineering drawings.

# Simplifying Hospital Records Management

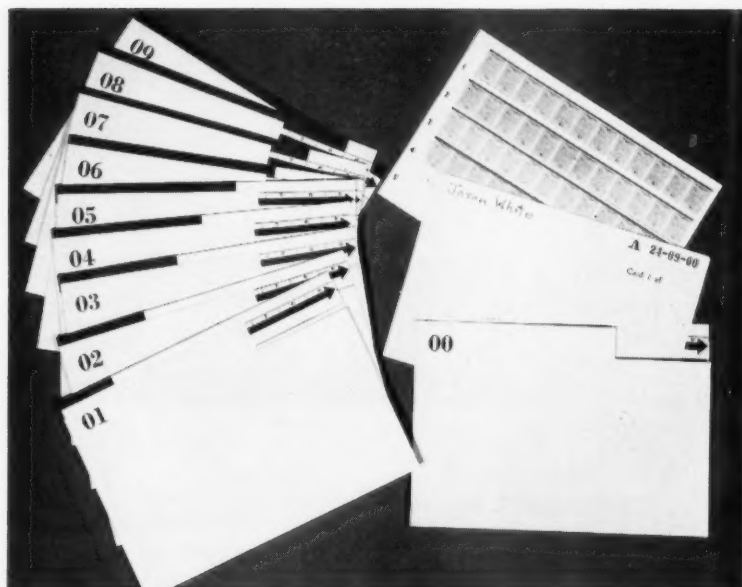
by MARIE H. SMITH, R.R.L.  
Director, Medical Record Dept.  
Boston Children's Hospital  
Medical Center



FINGERTIP control for rapid location and withdrawal is key to system.



STAFF member reviews Microcard on reader in Medical Records Department.



SEEN ABOVE are folders in Terminal Digit sequence 00-09, illustrating color and blocking control as well as Microtaped card, front and back.

**Microtape card system enables Boston's famed Children's Hospital to save space, time and effort and cut costs.**

The responsibility of the Medical Record Department at a hospital such as ours is extremely important. It must meet all demands for records needed in all the current activities of patient care, research and education. In addition, it must provide old records for use in the long term follow-up of patients, and must make available records of patients, now adults, whose former medical history is still of importance to them in subsequent illness, for insurance purposes, for Selective Service, for Social Security benefits and many other needs. It also must make the old records available for research and study purposes. Our department keeps more than 10,000 records in circulation at all times; furnishes over 400 each day.

In addition to providing records, our Department is also responsible for preserving them. And it is this latter function which has given us some of our more severe headaches.

Our hospital has been in existence since 1869. Naturally, the older we get the more records we have and the less space we have in which to store them. Also, the older conventional paper records get, the more they deteriorate.

In the spring of 1958, a large research project resulted in the discovery that record folders were deteriorating at a dangerously rapid rate. A survey of the cost of labor, time and materials revealed that an expenditure of \$20,000 would be necessary for replacement of the folders, with no improvement in the storage problem.

## Microfilm Considered

Microfilm as a solution to this growing problem had been considered back in 1950. It had been rejected at that time because of the inadequate reproductive qualities of the roll film then available, its inconvenience, its non-adaptability to our unit numbering system, and, most of all, because of its cost.

However, in the interim a new microrecording product had emerged which seemed to offer a solution to our problem. The product was Microtape, a positive copy of the micro images appearing on roll negative microfilm. A pressure-sensitive, laminated, adhesive backing on the rolls of Microtape facilitated mounting on 4 x 6 cards. Images were of excellent quality; even

*continued on page 34*



# Answer to a Banker's Prayer

When the number of checks processed annually reaches astronomical proportions, how do you keep the system functioning? The Federal Reserve Bank's answer is MICR.

Four magic letters, MICR, may help solve the most pressing operational problem facing banks today, thanks to an experiment now under way in the Federal Reserve Bank System. The letters stand for Magnetic Ink Character Recognition and the problem is to evolve a system to process efficiently an enormous, ever-mounting volume of checks.

## Five Banks Set Up

In recent weeks, the Federal Reserve Bank of New York has received delivery of various components of a pilot electronic processing installation. Similar equipment is being installed at four other Federal Reserve Banks for a thorough system-wide test of performance capability and operational feasibility of equipment. The electronic check handling system will come none too soon since the number of checks be-

ing processed annually is reaching astronomical proportions. Before World War II, the number of checks used each year was about 3.5 billion. Last year it reached 12 billion, of which some four billion passed through the Federal Reserve System.

Staggering as these totals may be, they reveal only part of the work involved, since each check is handled 10 to 20 times and by two or more different banks. It was this traffic that necessitated the introduction of "machines that can read if written to in their own language" (in this case E-13B magnetic ink).

Basically, here is how the system operates. A routing symbol-transit number, an account number, and an amount number are encoded in magnetic ink on a check (see illustration). The routing symbol-transit number tells the electronic equipment how to sort the check for its

proper destination; the account number tells the accounting machine whose account to charge, and the amount number indicates how much to charge.

## Preprinted Forms Supplied

The Federal Reserve Bank of New York has been supplying preprinted check forms to member and non-member clearing banks for drawing on their accounts at the "Fed" for several months. The number of commercial banks implementing the program has been increasing steadily also. To speed up such implementation, the Federal Reserve Banks and the American Bankers Association, the organization which has been the prime mover behind progress toward check automation, are urging all commercial banks and individual depositors

*continued on next page*

N <sup>o</sup> 674		JOHN Q. PUBLIC	50-226
		CITY, STATE	213
		Aug. 1 19 60	
PAY TO THE ORDER OF	John H. Jones	\$102 <sup>95</sup> / <sub>100</sub>	
One Hundred Two and <sup>95</sup> / <sub>100</sub>		DOLLARS	
ANYTOWN BANK		John Q. Public	
CITY, STATE			
⑈0213⑈0226⑈ 1234⑈06789⑈ 702 ⑈0000010295⑈			

ROUTING SYMBOL transit number in transit number field tells electronic equipment how to sort the check for its proper destination.

ACCOUNT NUMBER tells accounting machine whose account should be charged.

THIS number is for control purposes at issue bank.

AMOUNT FIELD contains total of check encoded by the first collecting bank which has necessary equipment.

to have their checks printed this way.

What are the steps that a bank takes to get into electronic check handling? They are simple and can be relatively inexpensive if a bank does not contemplate automation of its own check-handling operations immediately. First, some redesigning of the bank's checks may be required. However, this presents few problems since the majority of check printing firms have already redesigned their stock checks for the new system and are ready to assist in any further redesigning.

The MICR check looks very much like most conventional checks. However, its length must be at least six inches and must not exceed 8¾ inches. Its width must fall between 2¾ and 3⅓ inches. Moreover—and this is crucially important—there must be a clear "Magic Band" of ⅜-inch width, extending at least six inches along the bottom of the check from the lower right corner. No printing other than the prescribed E-13B characters in magnetic ink is permitted here.

The next step is to arrange for the preprinting in magnetic ink characters of the routing symbol-transit number in the position prescribed by the ABA (see illustration). In effect, this gives the check its "electronic address." For banks not contemplating the adoption of automated accounting systems for their own check handling, no other action is necessary in respect to their own checks. Other banks, however, will wish to consider the preprinting in magnetic ink of the customer's account number in the "On Us Field" of the "Magic Band," since this is required to make checks compatible with a fully automated deposit-accounting system.

#### Last Step

The final step in making the check fully qualified involves coding the amount of the check in the "Amount Field." This operation, which calls for encoding equipment, can be performed by the first bank receiving the check that has such equipment, in most cases as a by-product of proving the deposit. In

*continued on page 35*

## They Reproduce "Anything"

A while back the administrators of Brooklyn College decided that it would be a good idea to have a duplicate master of its library's author-title file.

It was a big reproduction job, so big that it scared away many commercial houses that were asked to submit bids. The file consists of 625,000 separate cards. Each one of these had to be reproduced without interrupting the activity of one of the nation's busiest scholastic libraries.

Ultimately, the contract went to Mathias & Carr, New York documentary reproduction specialists. Not only did they offer to do the job for less than the other bidders, but they also offered to provide *positive* same-size copies of each card on 62 lb. 100% rag linen ledger stock. In the past, libraries wishing to duplicate their files have had to content themselves with negative stats or pay the additional money for the extra step of turning the negatives into positives. Usually, they settled for the negatives and all the ills that such sensitized reproductions are heir to.

Mathias & Carr were able to offer low-cost positives because they had mastered the technique of wedding microfilm and xerography.

The original cards could not be removed from the library, so M & C dispatched three operators with a Griscombe 35mm planetary camera to the college to do the initial microfilming job right on the campus.

A special template was made which allowed ten 3-x 5-inch cards to be filmed at one time along with a trimming mark for future use. The cards were fed to the camera from file drawers. As soon as a drawer of cards was filmed, it was returned to library service. Nine to 10,000 cards were filmed each day.

The exposed film was sent back to Mathias & Carr's home office in downtown Manhattan for processing in one of two Oscar Fisher fully automatic film processors.

The positives were obtained by electrostatically reproducing the microfilmed images on a No. 1 Copyflo.

Slicing along the filmed trim mark, a guillotine cut the Xerox prints into 3 x 5 cards, which were then punched, boxed, labeled and shipped to the library.

The whole job took three months, and each reproduced card cost the library less than three cents.

Mathias & Carr pioneered the microfilm - electrostatic printing technique. In 1957 they installed the first commercial continuous electrostatic projector and printer in New York City. Then they began gathering microfilm equipment tailored for microfilming material to be reproduced on electrostatic printers. Today they have the largest commercial electrostatic facility on the East Coast.

Specifically, Mathias & Carr's Electrostatic Printing Department is equipped with three continuous printers (capacity: 3000 8½ x 11-inch prints per hour), five single-copy electrostatic printers, one single-frame microfilm electrostatic enlarger and one electronic paper trimmer (capacity: 6000 8½ x 11 sheets per hour).

Their microfilm equipment includes one Dea-Graph camera, 35mm planetary; three Griscombe cameras, 35mm planetary; two Diebold Flo cameras, 16mm; one Remington Flo camera, 35mm; two Dea-Graph cameras, 16mm planetary; one Diebold rotary camera and two Oscar Fisher fully automatic film processors for 16, 35, 70 or 105mm. □

# Reports Or Ratios

Whether faced with a scientific problem or producing a sales breakdown, K&M finds its computer comes through in the clutches.



EXECUTIVE checks over one of about 800 reports prepared monthly for Keasbey and Mattison Company on its Remington Rand data processing system.

Research and development engineers of the Keasbey & Mattison Company, Ambler, Pa., recently gave the company's Automatic Data Processing Department the following problem to solve:

Determine what quantities of liquid would flow through various diameters of Keasbey & Mattison asbestos cement pipe under all possible variations of head pressures.

Programming the company computer took eight hours, but running off the actual problem took just four minutes. Before the age of computers, it would have taken four weeks to work out the same answers on desk calculators.

This problem is typical of many that the K & M ADP Department solves each month, in addition to providing 13 daily, 55 weekly, 210 monthly and approximately 50 reports on a quarterly or annual basis.

Keasbey & Mattison is one of the companies that pioneered automatic data processing. One of the world's largest manufacturers of asbestos and allied products, it turned to punched cards as far back as 1932 for the preparation of payrolls and the compilation of sales statistics. Later, the system was used to handle labor distribution in production work.

By 1957 the company's labor force had increased to nearly 1500 and the wage ladder had become exceedingly complex. Fortunately,

automatic data processing equipment had kept pace with the increasing complexity of modern business operations. In that year a Univac 60 Punched-Card Electronic Computer was introduced into the system, and today it is the very heart of K & M's data processing.

## The System

The work produced by this system breaks down basically into three separate categories: payroll, sales and inventory statistics.

Production workers are guaranteed a basic hourly rate, plus extra pay per hour as an incentive for high production. In one pass of the punched cards, prepared daily from shop reports, the Univac makes a comparison of the guaranteed hourly rate against incentive pay, and produces the gross pay for the week, deducts federal and local taxes, Social Security, and any other factors such as insurance, union dues or savings bonds.

The second category of reports processed is based on sales statistics. Punch operators prepare detail and master cards daily from billing slips. These cards are used to furnish information to management.

Sales reports are broken down by customer, product line, geographical area, salesman, plant and warehouse. Reports are produced showing percentages, compared with the previous year and sales fore-

cast for the current year. Useful reports are provided to salesmen.

Finished goods inventory reports constitute the third basic category of information produced by the data processing system. Again, sales activity furnishes the starting point for arriving at a picture of inventory.

Weekly inventory records are produced from which production can be scheduled and turnover analyzed for maintaining inventory levels. These reports, in turn, enable the company to meet shipping dates without tying up too much capital.

## Additional Equipment

Keasbey & Mattison is presently contemplating the addition of equipment to its system, with an aim towards speeding and simplifying reports. Its goal is timely and effective feedback reporting to areas of responsibility, showing performance against the company profit plan. An automated order-writing system is also planned to improve customer service and expedite scheduling or orders placed on factories. A committee is studying the feasibility of bringing in a wire transmission system for direct tape communication between all of the company's plants, including the West Coast. The tape produced by this system would be transferred to punched cards by a Tape-to-Card Converter, and a larger computer would be brought in to handle the additional load. □

## NEW PRODUCTS

continued from page 8

### Keypunch Instructions

111

A Gal Friday kit, developed to replace keypunch instructions which may now be found on the back of old IBM cards in the keypunch section, has been introduced by *Pro-Forms*. The kit includes Pro-Forms (procedural forms) for use with up to 50 card forms as well as other tools for keypunch operators. Pro-Forms are available for use with other IBM data processing equipment. Price: Gal Friday Kit, \$12.50.

### Microfilm Paper

112

Anken Chemical and Film Corp. has announced Projection Mono-Copy, a silver sensitized reproduction paper for making enlarged positive copies directly from negative microfilm. With this paper the operator exposes in the normal way on any microfilm reader-printer or microfilm projection equipment. One-step developing is done in Anken's Monobath, using a processor of the Anken "27" type. Microfilm in aperture cards will reproduce on Projection Mono-Copy. Price:  $8\frac{1}{2} \times 11$ -inch copy, 5 cents.

### Aperture Card

115

A new aperture card in which the

film is protected on both sides by a triacetate covering is being offered by *Microseal Corp.* The acetate forms a pocket which securely holds the microfilm in position and permits the user to insert it himself. The covering is optically clear and in no way hampers reproduction. Other advantages include a greater image area than with other aperture cards and adaptability for storage of short pull down frames.

### Scheduling Device

116

A visual control board which offers versatility in all types of scheduling is available from *Conley, Baltzer & Steward*. Called Rol-a-chart Magnetic, the device uses magnetic indicators in six colors that are finished with a write-on wipe-off surface that permits indefinite use. Indicators move on a rotating plastic sleeve and come closer and closer to the line marking "today".

### Microfilm Printer

117

Output of large scale digital computers may be recorded by the *Stromberg Carlson S-C 4020* high-speed microfilm printer. Capabilities of the printer include recording data on microfilm at 15,000 characters per sec., plotting graphs on microfilm at 15,000 points per sec., and projecting selected data on a direct-view screen less than eight seconds after exposure. The S-C 4020 is

designed to operate with most high-speed computers and data processing systems in use today.

### Tab Cards

118

A new packaging method for tab cards has been introduced by *Baltimore Business Forms*. The units, called Handy-Tab Card sets, are made in multiple-copy sets, and are protected by packaging in dust and moisture-proof polyethylene wrappers. For use, simply pull the handy pull-tab openers and clean forms with fresh carbons are ready for use. Handy-Tab card sets are wrapped 25, 50 or 100 sets per pack; then packaged 1,000 sets in sturdy mailable cartons for safe and convenient storage and distribution.

### Tape Transmitter

119

Designed for use at each end of communications circuits, such as telephone, telegraph lines and microwave systems is the *Friden Teledata* Tape transmitter-receiver. With the unit it is possible to transmit punched tape data, including machine instruction, automatically. Five through eight channels are provided for transmission and receiving.

### Programming System

120

An automatic programming system for use with the *Bendix Model G-15* digital computer has been recently an-

# It's time for engineers to take





nounced. Called the POGO, (program optimizer for G-15 operations) the unit permits highly efficient computer systems to be written by personnel with relatively little computer experience. A set of simplified computer instructions is fed to POGO, which automatically rewrites the program and delivers a punched tape with an optimized program to be fed to the G-15 computer.

#### Tape Converter

121

A paper tape-to-magnetic tape converter, designed by *Daystrom, Inc.*, converts seven-channel information on punched paper tape to seven-channel information (plus sprocket) on metal magnetic tape. The converter is compatible with most systems in use today. Provisions are included for preventing unwanted data from entering the main data stream. Examples of the operational controls are manual intervention, data correction and operational checking. By directional tape-to-tape converters are also available.

#### Computer Panel

122

*Tech Panel Co. Inc.* has available panels and wires made to IBM specifications. Frames are made of lightweight aluminum, and all parts are subjected

to careful inspection to insure close tolerances. The printing on Tech panels is said to be the clearest obtainable and will not rub off with use. Jack and contacting types are available.

#### Tape Strip Reader

123

A photoelectric tape reader that senses perforations by means of silicon photo-diodes is available from *Digitronics Corp.* The reader, Model B3500, is bi-directional and utilizes four solenoids to control start and stop in either direction. The simple in-line feed permits easy load and unloading, and a self-cleaning effect prevents accumulation of lint and the possibility of reading errors. The standard unit is complete with an eight level plus sprocket reading head, power supply, gating and shaping circuits and amplifiers.

#### Microfilm Enlarger

124

A microfilm enlarger capable of enlarging film as small as 75 x 125mm on all photographic materials is being produced by *Microfilmex*. A companion to the Normic camera, the enlarger will make blow-ups to 36 x 48 inches. Specifications include: lens of 180mm focal length with optically level mirror, point filament lamp, rheostat to vary intensity in relation to the negative's density, and electric focusing by remote control.

#### Sequential Camera

125

The Compos-O-Line sequential card camera provides a way of transferring data from card records to continuous film or paper lists without chance of error in transcription. Its end product is a photographic negative with information arranged in galley, list or tabulated form, ready for making offset plates. The device, developed by *Lithoid, Inc.*, can also produce negative or positive images on sensitized paper for other reproduction methods. The Compos-O-Line accepts cards from 3x5 to 5x9 at a speed of 7,200 exposures per hour.

#### Magnetized Forms

126

*Consolidated Business Systems, Inc.*, announces the availability of business forms printed with magnetic ink which are compatible with data processing systems. Consolidated is also introducing a consulting service for firms interested in employing magnetic ink character recognition as part of their forms handling procedure.

#### Interpreter

127

A new series of selective interpreters which speed and simplify a whole range of punch card functions from preparation of customer bills and statements through printing of shipping labels has been

*continued on page 37*

## a new look at microfilm

■ Today microfilm is an active partner to production machines in modern plants—and is just as busy. Today engineers, methods and procedure specialists, reproduction supervisors, and industrial management use microfilm to solve paperwork problems and speed production. ■ Microfilm makes wonderful things happen. It standardizes records and drawings. It speeds reference. It simplifies filing. It shrinks file space—because with microfilm aperture cards you file 100% of your material in 4% of the space. It improves security. It raises efficiency, lowers overhead. ■ The only thing you need to make microfilm active—usable daily—is a THERMO-FAX "Filmac 200" Reader-Printer. Developed by 3M research, "Filmac 200"

Reader-Printers combine the functions of a reader and a printer in a single low cost unit. You read the film clearly on the big screen. When you want a print, just touch a button and in seconds you'll have a copy—enlarged up to 18 x 24 inches. ■ THERMO-FAX "Filmac 200" Reader-Printers in a reproduction department and at multiple point-of-use installations make microfilm practical for any industry. There are many "Filmac" Reader-Printers actively at work today in a variety of operations—saving time, money, and improving efficiency. We invite you to take a new look at microfilm now. Mail the coupon for a free copy of "Let's Take a Positive Look at Microfilm"... a twelve page booklet about microfilm at work.

**MINNESOTA  
MINING AND  
MANUFACTURING COMPANY**



...WHERE RESEARCH IS THE KEY TO TOMORROW

THE TERM "THERMO-FAX" IS A REGISTERED TRADEMARK OF 3M COMPANY  
St. Paul 6, Minn.

Minnesota Mining and Manufacturing Company  
Dept. FBZ-100, St. Paul 6, Minnesota

Please rush me a free copy of "Let's Take a Positive Look at Microfilm."

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Circle No. 513 on Post Card

# PHOTOCOPY

## PORTABLE UNITS

Company & model	Max. paper size (in inches)	No. copies	Copies per min.	Cost per copy	Copies colors?	Copies from Books?	Weight & size	Remarks	Cost
<b>A. B. DICK</b>									
Model 101	9	12	3	8c	yes	no	12 lbs., 19x 6x12		\$ 99.50
Model 110	10x15½	12	3	8c	yes	yes	31 lbs., 25x10x10		\$225
<b>AMERICAN PHOTOCOPY</b>									
Uni-matic	11x17	1	8	8c	yes	no	20 lbs., 14x11x 6		\$423.50
Dial-a-matic	14x17	1	8	8c	yes	no	20 lbs., 20x10x 6		\$375
Director	11x17	1	8	8c	yes	no	20 lbs., 14x12x 6		\$223.50
<b>AMPTO</b>									
Nine	9	1	3	8c	yes	no	28 lbs., 13x16x11	Cost of Nine incl. 2	\$224
14	14	1	4	8c	yes	no	28 lbs., 27x 8x13	paper safes.	\$349
<b>COPEASE</b>									
Book Copier Model A	8½x14	2	4	8c	yes	yes	27 lbs., 19x18x11	Silver trans. dry process.	\$325
Book Copier Model B	14x17	2	4	8c	yes	yes	68 lbs., 25x24x13		\$438
Champion	15	2	4	8c	yes	no	28 lbs., 27x 7x 7		\$375
Comet	9	2	4	8c	yes	no	23 lbs., 22x 7x 7		\$250
Crusader	9x14	1	6	8c	yes	no	43 lbs., 21x16x10		\$495
<b>COPY-CRAFT</b>									
C-11	11	2	5	8c	yes	no	25 lbs., 21x11x 5		\$229
6330	15	2	4	8c	yes	no	35 lbs., 29x11x 6		\$329
6440	9	2	2	8c	yes	no	16 lbs., 18x10x 5		\$229
<b>CORMAC</b>									
Model 105 Book Prin.	11x17	1		8c	yes	yes	33 lbs.	Req. separate processor.	\$169
500	14	1	3	8c	yes	no	33 lbs., 6x13x22	8 paper stocks available.	unavail.
Golden Corvette 123	14	1	3	8c	yes	no	22 lbs., 9x22x 7	Polycopier gives unlimited no. of copies.	\$299
Golden Corvette 101	11	1	4	8c	yes	no	18 lbs., 9x22x 7	Discounts available on paper	\$249
Coronet 103	18	1	4	8c	yes	no	30 lbs., 10x25x11		\$399
300	11	1	4	8c	yes	no	20 lbs., 5x14x23		\$299
Corvette 102	8½x14	1	4	8c	yes	no	14 lbs., 9x22x 7		\$169
Polycopier	9		3	8c	yes	no	7 lbs., 12x17x 5		\$ 79.50
Model 14	14	1	3	8c	yes	no	14 lbs.		\$139
<b>EASTMAN KODAK</b>									
Verifax Bantam	8½x11	5	8		yes	yes	14 lbs., 13x17x10	Cost per copy 2-9c dependant on quantity.	\$ 99.50
Verifax Signet	8½x11	5	8		yes	yes	23 lbs., 13x23x21	Copies dry, liquid activator.	\$148
Verifax Viscount	10x16	5	8		yes	yes	73 lbs., 14x29x17	Signet, Bantam models req. accessory for book copying.	\$425
Verifax Regent	8½x11	5	8		yes	yes	26 lbs., 11x21x14	All 4 models operate manually.	\$240
<b>GENERAL PHOTO PRODUCTS</b>									
Challenger	9x15	10	2	8c	yes	yes	14 lbs., 6x10x16	One solution. Cost per copy 3-12c dependant on quantity. Hand-operated Challenger model available.	\$119 (elec.)
Portafax	9½	10	2	8c	yes	no	11 lbs., 6x10x16		\$149
20 Duo	20	10	2	8c	yes	no	30 lbs., 12x 8x30		\$450
<b>HUNTER PHOTOCOPYIST</b>									
Royal Scot Laird	12		3	6c	yes	yes	29 lbs., 23x15x 6	Stabilization process. Unlimited no. of copies.	\$260
<b>INTERNATIONAL PHOTOCOPY</b>									
Mark III	13¾x20	1	4	8c	yes	yes	28 lbs., 22x24		\$299
Perfecta 9	10x26	1	4	8c	yes	yes	29 lbs., 10x20		\$257

# DIRECTORY

**\$550 AND UNDER**

Company & model	Max. paper size (in inches)	No. copies	Copies per min.	Cost per copy	Copies colors?	Weight & size	Remarks	Cost
Perfecta 15	15x36	1	4	8c	yes	yes	39 lbs., 10x26	\$375
<b>KWIKKOPY</b>								
B-4	8½x14	1	3	8c	yes	yes	37 lbs., 18x21	\$225
<b>F. G. LUDWIG</b>								
Contoura Legal	8½x14	1	3	8c	yes	yes	6 lbs., 15x10x 3	Squeegee drying. Weight of portable varies with size. \$ 76
Contoura Magna	14x17	1	3	8c	yes	yes	12 lbs., 19x15x 3	\$125
Contouramatic 2	9	1	3	8c	yes	no	27 lbs., 13x16x11	\$119
Contouramatic 14	14	1	3	8c	yes	no	27 lbs., 7x27x12	\$349.50
Contoura Portable	14x18	1	3	8c	yes	yes		\$ 50-\$125
<b>MINN. MINING &amp; MFG.</b>								
Thermofax 14	8½x14	1	10	5c	most	no	96 lbs., 11x27x17	Dry process. \$429
Thermofax Premier	8½x14	1	10	5c	most	yes	115 lbs., 14x27x17	\$499
Thermofax Secretary	8½x14	1	15	5c	most	no	45 lbs., 9x19x15	\$329
Thermofax Courier	8½x14	1	8	5c	most	no	25 lbs., 4x12x14	\$209
<b>MULLEN</b>								
Standard	24	3		8c	yes	yes	21 lbs., 21x11x17	With Magi-Plate produces up to 40,000 copies. \$169-\$549
<b>NORD PHOTOCOPY</b>								
Auto-flow 99	18x24		12	5c	yes	yes	40 lbs., 18x14x28	Unlimited no. of copies \$199
Imperial 300	18x24		12	5c	yes	yes	55 lbs., 26x24x13	99 has cartridge for solution. \$385
<b>PEERLESS PHOTO PRODS.</b>								
Dri-Stat	37x42	1	2	8c	yes	yes	25 lbs., 6x19x10	Quick Silver model uses \$165-\$349
Quick Silver	37x42		4	5c	yes	no	30 lbs., 12x25x18	stabilization process and gives unlimited no. of copies. \$149-\$395
<b>PHOTORAPID</b>								
Electra	24	15	2	8c	yes	no	26 lbs., 26x11x 7	Size and cost of Electra \$329
Satellite	11x17	15	2	8c	yes	yes	32 lbs., 20x14x16	refer to 14" model. \$169
Polaris	9	10	3		yes	no	10 lbs., 6x20x12	\$ 99.50
Pioneer II	10x15				yes	yes	50 lbs., 24x14x30	\$495
<b>PHOTOSTAT</b>								
Instant Copier	8½x16	5	5		yes	yes	51 lbs., 16x21x13	Dye transfer process. First copy costs .123c, subsequent ones, .005c. \$225-\$285
<b>ROVICO</b>								
Standard 12"	12		4	8c	yes	yes	20 lbs., 11x20x 5	Unlimited no. of copies. \$225
Executive 15½"	15		4	8c	yes	yes	38 lbs., 13x25x 6	\$325
Copymaster 19½"	19		4	8c	yes	yes	41 lbs., 13x27x 6	\$425
<b>SAVIN</b>								
99	9	20	4	8c	yes	no	8 lbs., 12x 6x 5	\$ 99.50
<b>SMITH-CORONA</b>								
Vivi-Copy 9	9	7	3	8c	yes	yes	12 lbs., 19x 6x12	Tru-cartridge eliminates \$ 99.50
Vivi-Copy 12	12	7	3	8c	yes	yes	35 lbs., 20x 6x13	solution handling. \$269.50
<b>SPEED-O-PRINT</b>								
Model 1	9	1	3	8c	yes	yes	24 lbs., 13x17x12	Accessory needed for multiple copies from same matrix and book copying. \$199
<b>TRANSCOPY</b>								
Star	9½	1-5	3	8c	yes	no	27 lbs., 22x14x 5	Cost includes replenish- \$233.50
Mercury	15	1-5	3	8c	yes	no	34 lbs., 29x14x 5	er reservoir. \$349.50

# Yours for the Asking

New free literature on the latest developments in the data processing and microfilming fields. Each item listed has a key number. For more information circle that same number on the Readers Inquiry Card.

## Systems

### Planning a System 201

Charles Bruning. "Basic Microfilm Indexing and Filing Techniques" tells how to achieve maximum results from a microfilm system.

### Data-Automation Systems 202

Remington Rand Univac. 24-page booklet describes (in layman's language) the numerous functions of the equipment comprising the firm's data-automation systems.

### Micro-Reproduction System Specs 203

Minnesota Mining & Mfg. Co. Folder discusses the new standards and specifications of the engineering data micro-reproduction system used by the Department of Defense.

### Graphic Pictures 204

Graphic Systems. Boardmaster visual control system gives graphic picture of operations in production, traffic, inventory, etc.

### Automatic Xerography 205

Haloid Xerox. Learn how you can reduce space taken up by engineering drawings by 95 per cent.

### Punch Marking System 206

A. Kimball Co. Booklet describes an automatic reorder and inventory system and its many advantages for the manufacturer and retailer.

### Record Handling System 207

Acme Visible Records, Inc. "Revolution in Record Handling" describes the Rotary, a record handling system offering space reduction and quick access to records.

## Microfilm Cameras & Readers

### Microfilm Reader 210

Taylor-Merchant Corp. Information about compact microfilm reader that reads roll film, aperture cards and sheet film.

### Portable Microfilmer 211

Recordak. Flyer on the Recordak

portable microfilmer with a 20 to 1 reduction ratio.

### Magazine Camera 212

Photo Devices. Data on the model PD1100, a 35mm microfilm camera with removable magazine and 100' capacity.

### Microcard Reader 213

Microtape Filing Systems. Sheet describes new compact Microcard Reader which greatly expands the usefulness of Microcards.

### Microfilming Information 214

The Gevaert Co. of America, Inc. 28 pp. booklet gives valuable information and technical data about micro-filming.

### Universal Reader 215

Documat, Inc. Description of a microfilm reader for both roll film and unitized film.

### Camera-Enlarger 216

Dea-Graph Equipment Ltd. Data on the CA 7, a 35 mm camera-enlarger for all microfilming and reproduction jobs.

## Computers and Accessories

### Inventory Control 219

Bendix Computer Division. Illustrated application report on how the G-15 Computer helped solve a complex marketing problem.

### Data Processing System 220

Royal McBee. Data on the RPC-9000, a DP system whose serial mode of operation permits great reduction in original equipment cost.

### Electronic Data Processing 221

Radio Corp. of America. Booklet describes the 601 electronic data processing system which has ultra-high speed and enormous capacity.

### Large Scale System 222

Philco Corp. Data on the Transac S-2000, the only large-scale data processing system utilizing parallel logic and asynchronous operation.

### Data Processing 223

National Cash Register Co. Booklet on integrated and electronic data processing equipment.

### EDP Systems Rental 224

Minneapolis-Honeywell. Rental information about the Honeywell 400, an all-transistorized data processing system.

### Self-Contacting Panel 225

Mac Panel Co. Data on the 402-3 self-contacting panel which is easier to wire, check and change.

### Automation/Labelation Ideas 226

Allen Hollander Co. Portfolio shows how IDP equipment may be made more versatile and useful by using pin-feed, pressure-sensitive labels.

### Control Panel Wiring 227

Graphic Controls Corp. "Introducing an all-new approach to Control Panel Wiring" shows how costs can be lowered.

### Calculator 228

International Business Machines Corp. Brochure presents a thorough control-panel summary of the low-cost Model B-1 609 transistorized calculator.

### An Eye 229

Farrington Mfg. Co. Data on the EYE optical scanner, a machine that not only reads digits, but translates what it has read into data processing language.

### Punched Tape Accessories 230

Dresser Products. Descriptions of punched tape accessories which save hours of filing and handling time.

### Control Panels 231

Virginia Panel Corp. Details about self-contacting control panels with built-in lightweight features.

### Accessory Equipment 232

The Wright Line, Inc. 30-page catalog shows new data processing accessory equipment and gives info about the complete service available.

## Microfilm Cards

### Unitization 235

Microcard Corp. Literature tells how microcards make reference data instantly available to you.

### Carditioner 236

Cummins-Chicago. Folder describes carditioner which makes it possible to set up punch cards systems formerly found impractical because of mutilation problems.



## Business Forms

### New Form 238

Moore Business Forms. Data about Speediflex, a new form which gives forms-handling efficiency to users of continuous marginal punched forms.

### Actifilm Cards 239

Datagraphic Systems. Description of the Actifilm card file system, which allows a drawing 35 feet long to be reduced to tabulating card size.

### Business Forms 240

Baltimore Business Forms. "A Robot Writes" tells how orders phoned in at 2:00 AM can be automatically written and ready for delivery the next morning.

## Film, Darkroom Equipment and Materials

### Neg/Reversal Processor 242

Filmline Corp. About processor which develops both film types.

### Tri-Film Processor 243

Canadian Applied Research, Ltd. Info about processor which automatically develops and dries film.

### Printer-Processor 244

Kalvar Corp. Interesting information about the Kalfax Microfilm Printer-Processor.

### Fuji Microfilm 245

Ideax Corp. Brochure gives specifications on Fuji negative and positive microfilm.

### Aiglonne America 246

Andre Debrie. Specifications on the Model America processor, which replenishes automatically.

### Mono-Copy Paper 247

Anken Film Co. Data on how positive copies can be made directly from negative microfilm.

### Mini-Rapid Processors 248

Fairchild Camera & Instrument Co. Booklet describes Fairchild's line with leaderless film delivery.

### Microfilm Processing 249

Houston Fearless Corp. Brochure on the Microfilm Labmaster for microfilm processing.

## Reproduction

### Photostat Photocopiers 251

Photostat Corp. Specifications on

Photostat #2 Standard, #2 Special and #4 Standard Photostat copiers.

### Miniaturization Equipment 252

Keuffel & Esser Co. Information about two dynamic new developments in miniaturization of engineering drawings.

### Rapid Microfilm Processing 253

Andrews Paper & Chemical Co., Inc. Information about the rapid enlargement and processing of microfilms that is possible with the Rollacopy process.

## Filing & Storage

### Automatic Insertion 255

Enbee Transparent Speciality. Info. about automatic insertion of microfilm into jackets.

### Record-Stack 256

Remington Rand. Folder tells you how you can design your own files for holding microfilmed cards.

### Marginal Punched Form Binder 257

Yawman & Erbe. Catalog L describes a complete line of binders for holding marginal punched forms.

### Systems Card Storage 258

Systems Sales Co. Description of systems card filers and mailing cartons which are economical and efficient.

## Services

### Microfilm Facilities 260

Microdealers. Folder describes nationwide services of this company which include microfilming of engineers drawings, public records, etc.

## Miscellaneous

### Beat the Clock 262

Bell & Howell. Description of the Phillipsburg automatic mail inserter, which enables you to handle mailings more quickly and with a savings of up to 80%.

### Addressing Machine 263

Scriptomatic. Data on the 10-S, an addressing machine designed to bring automatic list handling and addressing selectivity within reach of everyone.

### Collating Information 266

Thomas Collator Industries, Inc. Information on how you can speed up your collating operation (up to 25,000 sheets per hour) and substantially reduce costs.

## EDP IN ACTION

*continued from page 10*

existing small computers is now becoming available. There is also a considerable amount of experience to date operating remote locations tied to a computing center. Our organization is even now developing procedures for tying its research centers and field offices together. This is solely, or even primarily, a matter of transmission equipment. For most applications, distance is no longer the great barrier.

### Information Network

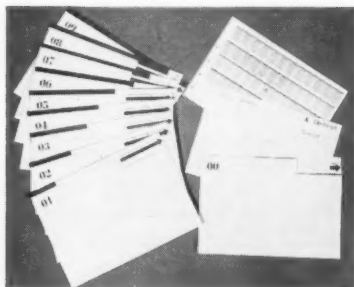
Once a system of satellite computers is functioning, we then have a network for the handling of information and intelligence throughout many parts of the country, almost simultaneously. We can scarcely realize fully the nature of the services it is then possible to offer. Remote inquiry of central files, for example, perhaps by a sales manager, from various cities becomes possible. Special scientific or engineering applications can be set up by a home office and specific problems submitted from the field for immediate solution. Remote programming and debugging of new routines becomes not merely possible but desirable, and the most powerful of machines will be available to many who could not possibly justify such equipment themselves.

### A New Approach

Perhaps the most far-reaching development will be a break-through in data handling processes. As far as we have come in the last five years, there are many time-consuming and intricate procedures with which present machines must contend. Sorting and sequencing, for example, are always a special consideration. With large, high-speed, random-access memories, we can take a new approach to many problems. Rather than expending effort to speed up troublesome procedures, it will often be possible to bypass them altogether. True integration of central files becomes a distinct possibility, rather than trying to keep several sub-files. □

## CHILDREN'S HOSPITAL

*continued from page 24*



those of photographs appeared in minute detail. Microtape cards could be taken anywhere and read with ease and accuracy with a pocket-sized reader.

Of extreme importance, they could be adapted to our unit numbering system. In this system, one number is issued to a patient on admission to the hospital, regardless of whether he represents an in-patient admission or out-patient visit; that number is retained for all subsequent admissions and visits of the patient and all information recorded must be filed in chronological sequence within this one record number. Roll film did not lend itself to this system because each time information had to be added, the film would require splicing.

A comparison of the cost of replacing folders versus the cost of Microtape was the straw which finally tipped the scale in favor of microfilm records.

The original medical records were transported to the General Microfilming Company in Cambridge, Mass., for filming and processing.

The film, in 100-foot rolled form, was then reproduced on Microtape in 100-foot duplicate rolls. Pre-indexed cards of 4 x 6, buff-colored, 100 per cent rag-content paper had been set up in numerical sequence and the individual medical history Microtape images were cut and affixed to the correct pre-numbered cards. To further insure correct reference, the name of the patient was added to each card. Fifty-five images could be placed on each card. When more than one card was necessary to contain the complete medical history information reproduced

on the tape, a second colored card, pink, was used. Subsequent re-admission information could be added to the proper numbered cards at any time, assuring the maintenance of a complete and continuous unit system.

The completed Microtape cards were delivered to the hospital, and the negative microfilm was sent to a vaulted storage area for protection of the original information, to be withdrawn only at such times as reproduction of any part of such information might become necessary; reproduction being guaranteed from the negative film, the original records were destroyed.

Filming of this group of records provided for the retention of 20 years of active records in their original form. This will be maintained by a planned microfilming program, which will retire one year of records every year.

### Filing System

Since it is planned to establish a uniform system of filing both original and Microtaped records, it was decided to convert and file the Microtape cards in the Terminal Digit system of filing.

In this system, sometimes called Reverse Filing, the numbers are read in groups of two digits from right to left. It is broken down into 100 terminal digit divisions (called primary) numbered 00 to 99. Each terminal digit has 100 secondary group divisions, numbered 00 to 99. Within the secondary group, material is filed in straight numeric sequence by the final group. The purpose of this system is to spread the work load over a larger area of numbers as opposed to numeric filing, where the greatest activity (the latest issued and most current records) is concentrated in one place.

Miniature color-coded folders which duplicated the color control in use on the active record folders were supplied by the Ames Color-File Corporation. Ten distinctive colors were used, one for each of the 10 terminal digit groupings. This reduced the possibility of misfiles to within 10 percent of the entire filing area.

These terminal digit groupings

were further divided by extending the color band through a scale printed on the folder. This scale had 10 divisions numbered from 0-9. These numbers corresponded to the last number of the terminal digit. The printed color was extended through the scale and evenly distributed through each of the 10 divisions corresponding to this last number, since this number changed 10 times to every one change of the first terminal digit. The same procedure was followed through all the colors. Since there are 10 colors and 10 divisions of each color, a misfile could now only occur in one per cent of the filing area.

### Control Extended

The control was further extended with the use of a black block for the first number of the secondary group of digits. This block, using the same scale, was over-printed on the color. The black block has a cut-out so that the color shows through. There are 10 black block changes within every band of each of the 10 colors. This now pinpoints misfiling to within 1/10 of one per cent of the entire filing area.

Without color-coding and blocking on the folders, misfiles could occur anywhere within the 171,500 records which were filmed and placed on Microtaped cards. With color-coding and blocking on the folders, the chance of misfiling was reduced to a group of 172 records. Regardless of the increase in the number of records filed, the control of the area of misfiles will always remain in the direct ratio of 1/10 of one percent of the total.

Since the Microtaped cards were pre-numbered, a cut-out was made on the upper right hand corner of the folder, so that when the card was inserted, the number would be visible. An arrow, pre-printed below the scale used for the color coding, became visible when the card was withdrawn, indicating that the card was out of file.

The folders were delivered in Terminal Digit sequence. The Microtaped cards, having been converted previously to this sequence, were then placed in the folders and into the file cabinets. □

## BANKER'S ANSWER

continued from page 26

NO 674	JOHN Q. PUBLIC CITY, STATE	REAR
Aug. 1 1962		
John H. Jones \$102.75		
One Hundred Two and 75/100 DOLLARS		
ANTHONY BANK CITY, STATE John Q. Public		
⑆0213⑉0226⑆ 1234⑉05789⑆ 703 ⑆0000010295⑆		

connection with testing its newly installed equipment, the Federal Reserve Bank of New York for the present will encode the amount on some checks not so coded but otherwise qualified. From the point of view of a smoothly operating MICR system, however, it is desirable that as many checks as possible arrive at the "Fed" or at any other intermediate collecting bank with the amount already encoded. Such checks are qualified for processing through high-speed equipment capable of handling upward of 50,000 checks an hour.

### Costs and Advantages

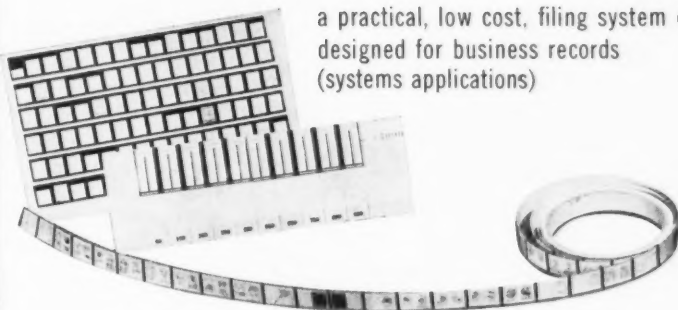
Naturally, questions will be raised in bankers' minds regarding the costs and advantages of such a program. Costs appear quite moderate when viewed against the potential benefits. Redesigning a bank's checks may involve some added expense but this can be minimized, as previously noted, through the use of stock checks. For special checks any redesigning cost will only be incurred once. Preprinting the routing symbol-transit number in magnetic ink may also involve slightly higher outlays but this too should decline as experience and volume increase.

The potential advantages of a widespread adoption of the MICR far outweigh the probable cost of the system. High speed electronic check handling means lower handling costs, increased productivity and greater accuracy. MICR opens the way to putting entire check-handling operations on a fully automated basis which more than pays for the equipment costs.

This article is condensed from material which appeared in the August 1960 Monthly Review of the Federal Reserve Bank of New York and appears through the courtesy of the Bank.

# Microtape...

a practical, low cost, filing system especially designed for business records (systems applications)



MICROTAPE\* filing systems are a new concept in records keeping, for they offer the full protection and space-saving advantages of microfilm on active records, plus increased efficiency, plus the flexibility of MICROCARDS.\* It is ideal for systems applications or for single copy or minimum copy users.

### THE CARDS

A typical MICROTAPE card is 3" x 5", on which you can attach 40 pages of 8½" x 11" material in MICROTAPE form. You merely cut the rolls of MICROTAPE into proper units and apply to ordinary paper index cards. There's no need for glue or paste, MICROTAPE has a pressure-sensitive adhesive laminated to the back side.

### THE METHOD

We make 100' rolls of 16MM or 35MM positive microtext from your material directly, or from your 16MM or 35MM Microfilm negative rolls. The advantage, of course, in using MICROTAPE cards is that additions and corrections are easily made and they eliminate the need for hunting through thousands of items to find specific material.

### MICROCARD READERS

MICROTAPE cards are easily read with any MICROCARD reader. The inexpensive POCKET SIZE model is as small as a package of cigarettes, adjusts to individual eyesight, and operates on battery or 110 Volt current. The desk-size model 6B is equipped with a card moving mechanism, is portable, and occupies only 10½" x 12" of table or desk space.



for further information write to:

## MICROTAPE SYSTEMS

44 Laura Street • New Haven, Conn. • Tel. HObart 9-1321

National manufacture and distribution under exclusive license from the MICROCARD CORPORATION

\*MICROTAPE and MICROCARD are registered trademarks

## SCHAKY PRODUCTION

*continued from page 21*



starts procedures to obtain special items.

Issue cards, also created from the reservation cards, are divided into two groups — cards calling for raw materials to be processed through our plant and those representing purchased or stock items to be issued for assembly. The first type is set aside in a pending file awaiting routing instructions, while the latter is sent to the stores department with bills of material to be used in issuing parts to the assembly department on the proper date.

Ultimately, move cards, operation cards and material issue cards come

together for a key step in the manufacturing control process. This involves processing the merged deck through the accounting machine to print our specially-designed routing folders. These manila folders are printed with a complete listing of information about the part to be manufactured and, subsequently, will be used to carry pertinent cards, reports, drawings and — when feasible — even small parts from operation center to operation center through the manufacturing process.

Following the printing operations, the basic move, issue and operation cards are used to reproduce the punched-cards which will come into play. These include schedule cards, another type of operation card and labor job cards.

The routing folder and all documents which have been prepared go to the production control department, where starting dates are scheduled. The dates are noted on a schedule report — printed on the accounting machine earlier from the move cards — and this report is held in a binder for reference and con-

trol. The remainder of the documents are handled in this fashion.

—Operation cards and one set of schedule cards are placed in a pending file until three weeks before the scheduled starting date.

—The routing folder is sent to the issuing department. It contains issue cards, move cards, labor cards, drawings and tool and instruction sheets pertaining to the part.

—A second set of schedule cards is filed in a production control work-in-process file by order and drawing number.

—A second set of operation cards is filed in the production control machine-load file by operation center, individual machine number and starting date.

This master machine-load file is a major reason for the success of the system. With it we are able to make any changes in scheduling with a minimum of effort by preparing new cards. We also are able to review at any time the workload for individual operation centers.

Each week we prepare a load  
*continued on page 39*

## INDUSTRY NEWS

*continued from page 11*

makes errors harder to hide. But it plays hob with the long-established routines of office work, assignments and promotions according to a recent survey by the University of Michigan Research Center. These findings are among the preliminary report of a five-year study of a changeover to electronic data processing at a large Midwestern utility company.

● Bendix G-15, Univac, and Burroughs 220 users, respectively, recently met under the auspices of Bendix, Remington Rand and Burroughs to exchange techniques and experiences. The fifth national Bendix G-15 Users Exchange Conference was held in Pittsburgh, Aug. 10-12. The Univac Users Association held its fall meeting in Washington, D. C., Sept. 22-23. Burroughs 220 Users group met in Philadelphia, Oct. 4-6.

● The October issue of *Navy Management Review* is devoted exclusively to "Automatic Data Processing in the Navy." Copies may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.

● Microrecording in school is winning plaudits for Multnomah College, Portland, Oregon. A course currently offered by the school, "Record Retention and Preservation by Microfilm" is said to be the first of its kind in the U.S. The school continues to offer a course in "Microphotographic Systems" which it also was among the first to institute.

● IBM computers are translating Russian into English for the Air Force. Based on a "photoscopic disc memory" a sophisticated word analyzer translates and prints out at up to 1,800 words a minute. The Russian letters are typed onto a special typewriter which converts them to punched-hole paper tape.

This is read electronically by the machine and compared to Russian-English words (coded black and white spots on the memory disc). An electric typewriter prints out the translation.



TYPIST copies Pravda onto special typewriter for paper tape conversion.



## NEW PRODUCTS

continued from page 29

announced by *Remington Rand*. The significance of the selective interpreters lies in the fact that they can "select" the data to be printed out.

### Mailing Inserter

113

The *Phillipsburg* inserter prepares a variety of material such as bulletins, publicity releases, checks and bills for mailing. Features include vacuum feed, nesting feature, postage imprinter, chain conveyer and tabulator card inserter. Up to 6,000 pieces of mail an hour are handled by the machine.

### Systems Machine

128

The *FotoList* system, developed and produced by the *VariTyper Corp.*, organizes information contained on *FotoList* punch cards as a sequential listing in the form of a negative by means of a camera scanning the cards. From this negative instant reproduction is possible. Lines of information contained on the source file cards become the lines of type in the final printing and no type has to be set. The U.S. Navy uses this system for the simplification of its many listings of ship's parts. A single drawer file of cards used in the process can eliminate a ton of metal type together with its cost of setting and composing.

### Analysis System

129

The most recent data processing development of *Victor Adding Machine Co.* research into high-speed transistorized analysis systems is the new *Victor Class 100*. With the optional feature of automatic programming, the machine will analyze urgently-needed information first. When operating under the control of the automatic programmer, the number of the department or account to be examined is immediately transmitted to a solenoid-activated *Digit-Matic* and printed on paper tape. This system, engineered to bring data processing within financial reach of medium-sized business, may be used to prepare up-to-date reports on labor, sales and production. Price of the basic system is about \$15,000.

### Control Panels

130

A complete selection of control panels manufactured to IBM standards and wires for the panels are both being manufactured by *Wright Line, Inc.* The lightweight *Wright* panels are constructed of aluminum, and the wires are color-coded for easy identification. One model of panel is self-contacting, eliminating the need for jacks and permitting much faster wire checking and changing.

### Calculator

131

A calculator which will read and

punch cards at a basic rate of 200 cards per minute has been recently introduced by *International Business Machines Corp.* Called the *IBM 609*, the calculator is for use in commercial, industrial and engineering setups. Input, calculation, storage and output functions are housed in a single cabinet. No special power lines are required. The 609 can perform additions and subtractions at microsecond speeds and multiplications and divisions in milliseconds. The 609 will rent for \$1,175 a month.

### Panel Wiring System

132

Lower costs in wiring control panels are claimed for the *Panellogic* system developed by *Graphic Controls Corp.* Instead of using uniform wire lengths with jack tips, the new system utilizes separate, self-contacting or jack-type terminals which are wired with a separate wrapping tool in a direct taut line. A complete kit is provided with 10 200' spools of color coded wire, a wrapping and unwrapping wire tool, and a wire cutting and stripping pliers.

Use key number when ordering literature with Readers Service Card.

### Labels

133

*Allen Hollander Inc.* has available pin-feed pressure-sensitive adhesive labels in flat fan fold packs for insurance company data systems. The labels can be printed on data processing equipment, the same as ordinary tabulating forms. They stick without wetting to forms, envelopes etc. High-speed output from punched cards, punched tapes, and magnetic tapes is said to present no problem, for the labels have marginally punched holes. They work equally well in machines fitted with either a pin-feed platen or tractor feed.

### Microfilm Reader

114

*Burroughs Corp.* has available its

*Model BH 206 Microfilm Reader*, which is designed to fit on a desk or table. The scanning mechanism of the reader permits reading of documents on full width of 8mm, 16mm or 35mm films. A full 360° rotating film turret allows the operator to orient the image to a natural reading position, and an indexing meter permits fast, easy document location. Provision is also made for making facsimile prints with a reproduction easel.

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# To The Editor

## To Fill a Great Need

I read your new publication when it first reached my desk and decided to write to you and thank you for publishing it. It will certainly fill a great need, particularly in the microfilming industry where information and data are always scarce. I continually receive letters and telephone calls from all over the country, from both government and industry, inquiring about matters that would be common knowledge in any other industry. I am certain that with your excellent techniques you will develop this publication into a useful source of

information for the industry. — Edward Rosse, Management Analysis Officer, Social Security Administration, Baltimore, Md.

## Welcomes Magazine

I read your first issue and found it to be very informative and interesting. I truly believe that this is the best publication to date in this specialized field and you and your staff can certainly be proud of a well-written magazine. Please enter a subscription for me. — William J. Conway, Systems & Procedures Dept., McDonnell, Aircraft Corporation, St. Louis, Mo.

## DOD Specs

We found Ernest Taubes' article on "Choosing a Microfilm System" (Data Processing & Microfilming Systems supplement to Industrial Photography, April 1960) extremely interesting. We should like to inquire of the Department of Defense as to progress and tentative conclusions in their study of standards for microfilming systems. Could you identify the project officers for us? —T. D. Green, Manager, Engineering Administration, Emhart Manufacturing Company, Hartford, Connecticut.

## VETERANS ADMINISTRATION

*continued from page 16*

The six reels of tape are merged into a single tape by the computer in the first computer run. This run also sequences all of the day's transactions in file-number order and edits for priority of sequence.

Meanwhile, there is already a tape of pending transactions held over from the previous day's operations to be considered. Pending transactions are defined as actions that must be held until the processing of priority items is completed. These transactions re-enter the system daily until action on them can be completed. In the next run the tape of pending transactions is merged or consolidated in proper sequence with items on the tape of new daily miscellaneous transactions.

The same run also edits for priority sequence and merges the items from these two tapes on the new tape. Thus, two or more transactions may concern a particular account. If one of them is a request for a record printout of status of the account, the status request is processed last so that the record printout will include the latest action on the account. There is now one input tape of the day's consolidated transactions to enter the system for the main updating run.

The main daily processing run

updates the master record for premium payments and all other purposes. Changes are made in the Master Record for each action. For instance as the result of a premium payment several items are changed. In the Fixed Life Segment the life call-up date and the day number of the last transaction are changed. In the Fixed Policy Segment, the policy call-up code and date, the last premium processing day number, last premium transaction amount and the next premium due date are changed. These changes will appear in tomorrow's master record.

## Disbursements

Disbursements are processed for payment in the following way. The tape from the main daily processing run is converted to punched cards showing disbursement data on such items as dividend credit or deposit withdrawals, various types of refunds, etc. The punched cards then are processed by three different accounting machines which serve six purposes: (1) they sort out dividends, other than those paid in cash; (2) they list the cards and take batch totals which are compared and reconciled with summary cards; (3) they separate foreign items from domestic items; (4) they list name and address cards and disbursement cards by voucher groups; (5) they separate name and address cards from disbursement cards; (6) they

interpret the disbursement cards, which are released with name and address cards to the Treasury Department for payment. When the disbursement cards are returned from the Treasury Department, they are tabulated and filed in the paid-dividend file.

The tape of record printouts is processed strictly for disbursement purposes, that is, to separate record printouts for Philadelphia, Denver and St. Paul. The consolidated output tape, which consists of lapse notices, renewal notices, requested premium notices, dividend credit or deposit statements, and loan or lien interest notices are processed through a special run to separate these different types of actions which are then processed through the printer or punch to prepare the document that is released to the insured. The transaction tape, which has an individual entry for each transaction, is processed through the computer to separate the St. Paul and Denver items from the master transaction list which stays in Philadelphia. The transaction lists are necessary as a means of obtaining transaction history of particular accounts. A unique system for recovering such information has been developed by the Veterans Administration in conjunction with the Minnesota Mining and Manufacturing Company. It will be described in our next issue. □

## SCIACKY PRODUCTION

continued from page 36



report by operation center or individual machine by removing all operation cards from the file and running them through the accounting machine. This totals the daily hours planned for each operation center during the forthcoming weekly period. The report provides a comparison to the capacity total of each operation center. On this basis, we are able to determine if any subcontracting, rescheduling or overtime is required due to an overload in an individual operation center. The operation cards are refiled in the master machine-load file following completion of the report.

Processing of the order starts in the shop three weeks before the beginning of the first machine operation. There is a visual load board at each operation center in the factory. By placing the operation cards in this board, we are able to determine machine activity at a glance. Three weeks before the scheduled starting date, the production control clerk files the operation cards in the shop operation center load board. A set of schedule cards is sent to the shop work-in-process control file, where it is filed in order number sequence.

### Issuing Department

The issuing department, usually the storeroom, in the meanwhile has cut and issued the material indicated on the routing folder for the operation which is about to begin. During this function, the issue card is removed from the routing folder, compared with the inventory item to make certain there is no discrepancy, and then is sent to the inventory control section as notice that the material has been issued. Receipt of this card in inventory con-

trol initiates removal of the reservation card from the availability file.

Routing folder and material necessary for manufacturing the part are delivered to the starting operation center. There the move card is taken from the folder and filed in the operation center load board in front of the corresponding operation card. This serves as notice to the foremen that the material is in the department and can be scheduled to a machine at any time.

The foreman assigns work by removing the move and operation cards from this load board and placing them on a rack at the individual machine which will do the work.

Upon completion of an operation, an inspector or foreman removes the move card from the machine, inspects the parts and then replaces the move card in the routing folder. On this manila folder, the operation just completed is stamped with the date. The folder then accompanies the material to the next operation center, where the process is repeated. The routing folder thus follows the material through the manufacturing process from start to finish.

Meanwhile, as part of our time-keeping procedure, an hourly pickup of operation and labor cards is made in each operation center by a timekeeper. He extends the time punched on the labor cards and checks it against the standard time shown on the operation card. Any discrepancies are referred at once to the foreman. It is the foreman's responsibility to contact the machine operator immediately to find the reason for any excessive time in machining operations. This hour-by-hour check gives us the opportunity to follow up on potential bottlenecks in our production process while information is fresh in everyone's mind. The reason for a time delay is written on the back of the operation card.

On the following morning, the machine accounting department processes the labor cards to print labor distribution reports and cost records. The operation cards are used in the production control department to unload the master machine-load file so that it does not reflect work already completed.

## INFORMATION MANAGEMENT

continued from page 6

sharp focus the three-pronged purposes of the function: to *facilitate* the achievement of management's objectives, to *prevent* failures to achieve these objectives, and to *correct* conditions which may cause or have caused such failures. These purposes entail assisting and guiding line management in identifying and defining objectives; specifying the pertinent facts needed to plan, coordinate, control and evaluate performance; and designing the means by which such facts (or information needs) can be supplied most efficiently and economically.

### Action! Action!

Facilitation, prevention and correction imply *action* by line management, and *action* should be based on pertinent and adequate information. As a corollary, information which does not motivate or lead to *action* is unnecessary information. And unnecessary information represents administrative waste. ☐

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# NEWSMAKERS

## Lester J. Johnson

Lester J. Johnson, president of the Business Forms Institute, trade association of the manifold business forms industry, is a man whose words are closely listened to. In addressing the group's recent meeting, he devoted a major segment of his talk to automation and data processing in all of its ramifications.

The gist of his comments was that a dramatic turnabout has occurred in the relationship of the business forms industry and American business, *per se*. In the past, the business forms industry has followed general business. Today, this role has been reversed as a result of BFI research. Now systems for all business are being pioneered by this specialized industry. No longer do forms systems merely follow business requests.

The expected result, according to Johnson, will be increased business capability and production due to less waste effort. Another result that comes with improvement is the end of the smugness which says the whole problem of record management is solved for all time.



Fabian Bachrach

Johnson assured the group that any unemployment caused by forms automation will be compensated for by increased production.

## Abraham Katsh

Last month Prof. Abraham I. Katsh left Moscow carrying micro-filmed manuscripts that record additional uncensored sections of the Talmud — the Jewish interpretation of Biblical law. Dr Katsh, chairman of the Department of Hebrew Studies at New York University, has made four trips to the Soviet Union.

On each visit he arranged for the Soviets to microfilm major collections assembled in the pre-revolutionary times from all over the world. These documents will be of value to all those involved in Jewish scholarship.

Dr. Katsh is the first Westerner to be given so broad an access to Soviet collections. He is receiving the microfilm in exchange for books and microfilm of Jewish data in Western lands.

## Charles Shafer

Charles B. Shafer of the New York Life Insurance Company was chairman of the recent International Systems Meeting in New York City. The major portion of the four-day program was given over to some 65 seminars covering virtually every area of business activity. Sessions on Application of Operations Research, Input and Output Problems in EDP Systems and Operational Management of Systems Departments are among those which attracted large audiences at the gathering held at the Hotel Commodore.

## Donald Eckman

Advancing the cause of young systems engineers who are now used by big companies to iron out bugs in their business procedures is Professor Donald P. Eckman.

This fall Prof. Eckman is heading the newly-created Systems Research Center which will train these men. Located at Cleveland's Case Institute of Technology, SRC will offer a systems curriculum carrying college credit for graduate engineers. The courses will deal mainly with the theoretical and analytical aspects of systems.

## Andrew Bohin

Time magazine is about newsmakers but it is no novelty when a Time staffer makes news. See



above is Andrew Bohin, cable distribution service chief for Time Inc., as he operates an automated correlator in the magazine's distribution department. The machine, a USI Robodyne Dynasort Correlator is used as an automatic Message Center. This innovation is, as would be expected, saving time, money and energy for Time. The machine correlates incoming news messages with appropriate editors in accordance with the contents of a given cabled message.

## Herman Limberg

Herman Limberg, our editorial advisor on information management problems, continues to be awarded honors. The latest is election as chairman of the newly organized Management Information Round Table, an informal group that meets monthly in New York to exchange ideas, techniques and experience in management information systems. Other officers elected with him include William Warren, Secretary-Treasurer, Milton Reitzfeld and Robert Schiff, program chairman, and John Whalen, member-at-large to the M.I.R.T. board of directors.



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